

CHAPTER 1

HISTORICAL FACTS/BIOLOGICAL QUESTIONS

Robert E. Henshaw

ABSTRACT

For millennia, the impact of humans on the ecosystems of the Hudson River Valley was minimal. That changed with the arrival of Europeans in 1609. Native Americans inhabited the valley and utilized resources concomitant with their needs. Europeans, although initially few in number, marketed the Hudson's resources to a vastly larger population in the home continent. The fur trade, a good example, began in 1610, but declined beginning only a dozen years later. The Native Americans who trapped and dried beaver skins were exceedingly skillful, and thousands of skins were shipped in the first few years. If the decline was due to extirpation of the beaver in the region, major changes in the ecosystems surely resulted. The high biological productivity and species richness of the wet communities would have declined as drier ecosystems developed. Biologists seek to describe animal abundances during colonial times and before. Although direct contemporaneous observations may not exist for species abundances, it may be possible to reconstruct abundances based on review of historical documents written on entirely different subjects. Subsequent chapters in the present volume propose a feedback relationship between human uses and changes in the ecosystems that human communities relied on. Reciprocally, changes made in keystone species such as the beaver must have required changes in uses that human communities made of those ecosystems as well as changes in the methods humans used to exploit their ecosystem resources.

INTRODUCTION

For thirteen thousand years the Native American groups lived along the Hudson River; Lenape in the southern and coastal portion, and Mahicans north of the Hudson Highlands. These groups fished the waters, hunted the forests, and created river-related cultures. When Europeans came to the area, they too created a culture that relied on the river and its surrounding ecosystems. Each of these cultures surely influenced the region's ecosystems. Biologists have tried to determine the character of forest and river ecosystems during the precolonial and early part of the colonial period, but few data are available. However it may be possible to reconstruct those early ecological conditions using residual evidence of earlier ecosystems, for example, pollen deposits or historical documents left by persons who had no formal knowledge of biology.

Europeans first traveled the Hudson River when Dutch businessmen in 1609, desiring to compete with Portugal in the spice trade, sought a northern route to the Orient. They engaged one of the many available English navigators, Henry Hudson, who hired a crew of Dutch and English sailors. On his third voyage Hudson, his way blocked by sea ice and facing a threatened mutiny by his crew, violated his contract with his employers and turned due west. He avoided fur trading European settlements in New France on the north as well as the religious English colonies in New England and Virginia. In September he entered the river that came to bear

his name and sailed as far north as then navigable to just south of present-day Albany. His crew's first impressions of the Hudson River, noted in the ship's log, were of the rich forests and likely productivity of the land (Juet 1610, Sept. 2nd).

FUR TRADE

Other Dutch explorers, Hendrick Christiaensen and Adriaen Block, investigated the lower reaches of the Hudson River from 1610 to 1614 (Lewis 2005). Block established a trading post on the island of Mannahatta (later Manhattan.). His report spurred Dutch businessmen to establish the New Netherlands Company and begin vigorous fur trade in the Hudson River region relying on active collaboration of the Native American population to do the trapping and drying of beaver skins.

Beaver trade in the Hudson River Valley, however, reportedly declined beginning in 1624 (Figler 2009), and was apparently commercially ended in the region by 1640 (Leach 1966). One may ask why fur trade from the Hudson River declined forty years before fur trade from adjacent regions. In those same years around eighty ships filled with pelts returned from New France on the St. Lawrence River (Ray 1978), demonstrating that the European market for beaver fur remained strong during the seventeenth century (Feinstein-Johnson 2009). Fur trade from New England also was active until the end of the century. European settlement of the Hudson River with consequent land clearance started so slowly that that could not have accounted for reduced beaver trade. Two possible explanations for the early decline seem probable. Either beaver trapping declined or beaver populations gave out, or trapping continued unabated but the pelts were sold to the French because the French provided better trade goods (see Bradley 2007, 61).

All trapping of furbearing animals and drying of the pelts was carried on by Native American hunters because Europeans recognized their superior skills as hunters and trappers. This meant that Europeans were entirely dependent on the Native Americans for their success in the fur trade. On the St. Lawrence River, the French respected the Na-

tives and treated them as equals (Fischer 2008). However, from the beginning in the Hudson River, the Dutch and English explorers, and then the fur traders, treated the Natives with distrust and disrespect. Henry Hudson's scribe, Robert Juet, whose journal is the only surviving record of the voyage, noted this distrust even on the first day in the river. "This day many of the people came aboard, some in Mantles of Feathers, and some in Skins of divers sorts of good fures. At night they went on Land againe, so we rode very quiet, *but durst not trust them*" (Juet 1610, Sep 5; emphasis added). Juet repeated the crew's distrust of these new people several times in his journal.

By the second day, conflict erupted and one of their crew was killed by an arrow. Hudson sailed north away from the coastal Lenape Indian tribes. Above the Hudson Highlands he encountered warmer acceptance by the Mahicans, but following further conflict, he hurriedly returned to Europe. In the following years, this early disrespect for, and conflict with, the Hudson River Native Americans became pervasive. Clearly settlers did not understand Native values and customs. They referred to them as "lazy" "sauvages" and "wilder" (wildmen) (Frey 2001; Lewis 2005). This distrust surely was known to the Native fur trappers. Trading with the Europeans may have declined as a result. An alternative explanation for the early decline in Hudson River fur trading might credit the Natives with trapping so efficiently that beaver in the region were effectively trapped out within a couple of decades. Either beaver populations remained high due to reduced taking or trapping exceeded replacement potential and the beaver was locally depleted. Because the Native Americans quickly became addicted to the Europeans' trade items, knives, axes, and beads especially, they likely continued to grudgingly trap to the point of commercial extirpation of the beaver from the Hudson River region.

The biological implications of the decline in beaver trade are profound. The biologist interested in environmental change might be able to examine records of the beaver harvest and infer conditions that could explain change. Actual field surveys of animal abundances did not begin until the nineteenth century, so knowledge of abundances in prior times must be mostly conjectural in lieu of de-

finitive contemporaneous reports of beaver populations. However, given the keystone importance of the beaver in controlling its ecosystem, the biologist might fruitfully examine historical records for indications of other ecological changes that may correlate with beaver abundance. Such changes would be predicted if trapping significantly reduced beaver populations.

The proclivity of the beaver to dam streams and create water impoundments that support extensive wet forest and swamp ecosystems is well known. As beaver populations were reduced, the number of water impoundments would have been reduced. The ecological effects would have cascaded through wetland and nearby dry ecosystems. Forest type should have shifted toward dry habitat communities. Cronon (2003) reported an increase in dry forest species occurred in New England in the late seventeenth and early eighteenth centuries as beaver trapping declined there. The abundance of wet habitat-dependent amphibians and birds, and possibly certain mammals, surely declined in response. Overall ecological productivity as well as species richness probably declined. For the biologist attempting to estimate abundances of species during this early settlement period when direct contemporaneous data are lacking, it may be possible to extrapolate those abundances and changing ecosystems by analysis of the beaver trade.

USE OF FIRE

Humans also effect large-scale change to their surroundings with predictable environmental consequences. An example is use of fire. Prior to arrival of the Europeans the Lenape people in the southern part of the Hudson River Valley used fire to clear patches in the forest for agriculture (Juet 1610, Sep. 2, Oct. 2; Williams 2001; Cronon 2003). In northern areas, where the Mahicans relied primarily on hunting and gathering, fire may have been used only occasionally to flush deer from cover (Cronon 2003). Fire, regularly used, causes profound effects on local ecosystems. Fire-tolerant tree species survive while others are lost. Cronon reported that during colonial times, fire used to open forests in southern New England caused fire-

tolerant tree species to be favored. Similar changes in forest types in the lower Hudson River Valley and coastal region may be conjectured. Cronon also reported that the shift in forest type in New England favored large mammals, as well as turkey, grouse, and raptors. Similar changes could have occurred in the Hudson River Valley if forests were modified or reduced.

COLONIAL LAND USE

Beginning with the New Netherlands Company the overarching motivation of the Dutch businessmen in the Hudson River region was commercial exploitation. Commerce in furs soon led to commerce in commodities and eventually to extractive industries.

Following their arrival European settlers did not adopt the Native peoples' hunting and fishing lifestyle. Rather, they imported their familiar European customs including land ownership, land clearing for homestead and pastures, and keeping of livestock. As land became exhausted, they cleared more forest. As livestock increased in number, more forest needed to be cleared for pasturing. Shift in the relative abundance of pollens from forest species to grass species in lake bottom soil cores correlate with the arrival of Europeans in the Hudson region (Peteet, 2010).

VALUE OF FUNCTIONAL ECOSYSTEM ANALYSIS

Historians have documented events and actions. They have given less attention to the patterns of ecological change over time, or to the possible underlying reasons for the changes. We can assume that colonial enterprises and activities had ecological effects; however, the induced changes in the ecosystems have been poorly described in the Hudson River region so that actual abundances of floral and faunal species at earlier times are not well established. Even so, it should be possible to reconstruct estimates of those plant and animal populations by relying on the interplay between human uses of the ecosystem (documented by

historians) and the expected ecological effects (researched by biologists). It is expected that such a collaborative approach may establish the character of the ecosystems during presettlement and early colonial periods.

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