Journal of Ecocriticism 5(2) July 2013

The Journal of Ecocriticism
A New Journal of Nature, Society and Literature

The Making of a Conservationist: Audubon's Ecological Memory

Christian Knoeller (Purdue University)[*]

Abstract

While Audubon's exploits as consummate artist, accomplished naturalist, and aspiring entrepreneur are widely recognized, his contributions as author and nascent conservationist remain less fully appreciated. Extensive travels observing and documenting wildlife as an artist-naturalist gave him a unique perspective on how human-induced changes to the landscape impacted wildlife. He lamented the reduction in range of many species and destruction of historic breeding grounds, as well as declining populations caused by overhunting and habitat loss. His understanding of changing landscapes might be thought of in terms of ecological memory reflected in his narratives of environmental history. He described the destruction of forests and fisheries as well as the shrinking ranges of species including several now extinct such as the Passenger Pigeon, Carolina Parakeet, and Ivory-billed Woodpecker. Quadrupeds of North America and the Missouri River Journals depict the impact of environmental destruction he witnessed taking place in the first half of the 19th century. While these later works suggest a growing interest in conservation, Audubon had already voiced such concerns frequently in his earlier writings. Copious journals kept throughout his career in the field on America's westering frontier reveal a keen appreciation for environmental history. By the time he arrived on the Upper Missouri in 1843, his values regarding the preservation of wildlife and habitat had been forged by writing for decades about his observations in the wild. What began as a quest to celebrate the natural abundance of North America by documenting every species of bird took on new dimensions as he expressed increasing concerns about conservation having recognized the extent of development and declines in wildlife during his lifetime.

[*] *Christian Knoeller, Purdue University (knoeller@purdue.edu).* *Portions of this article are based on conference papers delivered at the Society for the Study of Midwestern Literature (SSML), Midwest Modern Language Association (M/MLA), Great Lakes American Studies Association (GLASA), and the Association for the Study of Literature and the Environment (ASLE). The author wishes to thank David Radavich and Jason Splichal–as well as the anonymous reviewers at Journal of Ecocrticism–for their perceptive suggestions and generous comments on earlier drafts.*

Best remembered for his precise and highly expressive paintings of wildlife, perhaps John James Audubon's most profound legacy, beyond a truly prodigious body of artwork and publications, is the ideal of conservation itself. While his exploits as consummate artist, accomplished naturalist, and aspiring entrepreneur are widely recognized, his contributions as author and conservationist remain less fully appreciated. His writings are certainly less well known, yet as author and environmentalist Scott Russell Sanders points out, "During the years when he was feverishly painting the illustrations that made him famous, he was equally busy writing journals, letters, autobiographical essays and volumes of natural history. Taken together, these pages summon up for us the retreating wilderness" (*Audubon Reader* 1)[1]. His later writings depicting the impact of environmental destruction taking place in North America in the first half of the 19th century clearly reveal a "growing ecological anxiety" (*Audubon Reader* 9), though he had actually long recognized and lamented the wholesale destruction of wildlife by both overhunting and the loss of habitat. While later writings published posthumously, such as *The Quadrupeds of North America* the *Missouri River Journals,* suggest a growing interest in conservation, Audubon had already voiced such concerns frequently in earlier writing. Copious journals that he had kept over decades as an artist-naturalist in the wild in proximity to America's westering frontier reveal a keen appreciation for environmental history. How is it, then, that Audubon's sense of ecological memory contributed to his deepening belief in conservation throughout the several decades he was engaged as a field naturalist in service of his painting and publications[2]? What began as a quest to celebrate the natural abundance of North America by documenting every species of bird took on new dimensions as he expressed increasing concerns about conservation having recognized the extent of development and magnitude of environmental decline in his time.

How did Audubon arrive at his convictions regarding conservation? His extensive travels observing and documenting wildlife gave him a unique perspective on how human-induced changes to the landscape impacted habitat. He understood that unmitigated destruction of habitat raised the dire prospect of wildlife decline to the point of local or even absolute extinction of species.[3] His understanding of environmental history–particularly habitat loss and wildlife declines–kindled his sensibilities as a naturalist and inspired his nascent interest in conservation.

Audubon's understanding of environmental history might be thought of in terms of ecological memory[4]: recognizing pervasive changes to the landscape such as the destruction of natural habitat converted for development including agricultural uses. The "improvements" that typically accompanied initial settlement–whether felling trees, clearing fields, draining swamps, or breaking prairie sod–are shadowed by native species that would readily return in our wake, an instance of ecological memory in the biological sense. Elements of prior ecosystems can often be rejuvenated, at least partially, from traces that remain. Physical remnants such as remaining roots and seeds, dormant perhaps but still viable, awaiting rejuvenation or germination, are among the agents enabling regeneration. The countervailing force of plant succession and species diversification ensues the moment cultivated acres are left fallow. In the parlance of modern landscape restoration, *ecological memory* refers to the dynamic biological capacity of ecosystems to recover from disruption. Yet the concept of ecological memory can also be extended and re-construed in cultural terms: the legacy of human relationships with nature historically (Nazarea).

Audubon was familiar with the "civilized" landscapes of Europe. As a child, he was brought up in France, and as an adult he spent more than a decade in the British Isles while arranging publication and promoting *Birds of America.* He recognized that the remaining wilderness of America stood in striking contrast to exhausted regions of the Old World. While he did not live to see publication of George Perkins Marsh's seminal treatise on environmental history *Man and Nature* in 1864, he had independently begun to reach similar conclusions about threats to natural abundance in the New World several decades earlier. Bearing witness to the history of landscape change underlies his turn toward conservation–"his perceptions of a wild America in the process of being domesticated" (Knott 25). After considering his account of the last collecting expedition on the Upper Missouri–often cited as evidence of a turn toward conservation–I will examine his earlier writings to determine how these concerns had actually developed throughout his career.

Audubon's views on conservation were expressed perhaps nowhere more forcefully than in journals from his expedition on the Upper Missouri River in 1843. By that date, as biographer Richard Rhodes explains, "the eastern wilderness was filling up with new Americans, moving out in ever-greater numbers from the tidewater. If there was wilderness yet to see, it was west, up the Missouri River to the Yellowstone River and beyond" (*Making* 418). Despite having long postured as a consummate backwoodsman, Audubon did not actually visit the West until that trip to collect specimens and to sketch mammals. His journals from the journey foretold and even "mourned the destruction of wild America" (Flannery 6). As a naturalist witnessing the expansiveness of the American West firsthand, he simultaneously recognized the beginnings of its demise.

The last collecting expedition of his storied career was devoted to what he and co-author John Bachman hoped would become a definitive work on the continent's mammals to be titled *Viviparous Quadrupeds of North America.* The Missouri River journey was essential to this project since a number of key species were unique to the West, including antelope, mountain sheep, and by that time even the American bison. Audubon described the ambitious geographical scope of the project as encompassing the entire continent of North America, including regions he characterized as "at the present period an uncultivated and almost unexplored wild, over by ferocious beasts and warlike Indian tribes" (*Quadrupeds* 10). While emphasizing the extent and difficulty of the enterprise, Audubon also implicitly suggests the inevitable prospect of exploration and settlement.

Traveling on the Ohio River from Louisville on his way to the Upper Missouri, Audubon marveled at how dramatically the village of Henderson had grown since the 1820's when he had been a merchant and speculator there during the town's founding days. Similar progress, he reported, had rendered many settlements along the river almost unrecognizable: "We passed several villages now called cities and so improved in size that I with difficulty recognized them" (McDermott *Audubon* 31). He personally felt the full force–the vertigo–of such rapid transformation. Throughout his career as artist-naturalist, he had effectively "followed the military frontier into the species-rich environments," initially in the southeast, but then progressively westward (Kohler 7). His letters depict a whirlwind of activity on the docks of St. Louis: "horses on board, waggons, carts, carriages, and furniture of all description belonging to new settlers going to the Missouri frontiers" (McDermott *Audubon* 32)[5]. This frantic migration westward is a backdrop to Audubon's depiction of the expedition as a whole.

During of the first half of the 19th century, much of what was thought of as the "frontier" was in flux as wave after wave of pioneers carved homesteads from wilderness: felling trees, clearing field, breaking prairie sod, and planting crops. Especially in earlier years, Audubon was not above expressing enthusiasm about such settlement and progress, echoing the nation-building rhetoric of his time (Knott 37-8). He embodied in many ways the competing discourses and values of an era when limits of the seemingly inexhaustible abundance of North America had only begun to be exposed. While he was not alone in this recognition, he was uniquely positioned to convey it to a broad international audience. The narrative of courageous pioneers settling on the frontier had enormous currency in his day, after all, and Audubon sought to sell books. Yet he clearly understood the dynamic and volatile process entailed, as well as its impact on the environment. He witnessed white settlement edging ever westward throughout his lifetime. Moreover, he recognized how rapidly development could proceed in the wake of initial settlers.

As he continued upstream from St. Louis, Audubon described "settlements all along both shores and the Lands are rich enough to produce anything" (McDermott *Audubon* 75) and depicted pioneers carving out a precarious foothold only to be dislodged by flooding. "The Number of habitations halfway in the water is quite Surprising," he wrote (McDermott *Audubon* 80); "in a great number of instances the squatters, farmers or planters, as they may be called, are found to abandon their dwellings and make towards higher ground" (*Journal* 559). Further upstream, where settlement was restricted the east bank, the scattershot homesteads of white settlers rose in close proximity to Indian land: "There are a few houses, one or two Grist and Saw Mills, and an abundance of loafers *of all descriptions*.— We have passed the Kickapoo's Nation and are now opposite to that of the Sacs…. In three or 4 more days we will have passed the bounds of Civilisation…. the line dividing the State of Missouri from the wilderness I am now pleased to call the Country ahead of us" (McDermott *Audubon* 82-85). As ecocritic John Knott concludes, "Beyond the frontier regions of settlements and squatters cabins lay what he saw as the primal American wilderness" (190). Yet Audubon realized that even remaining open space was ultimately destined for development as well: a "truly beautiful site for a town or city, as will no doubt [arise] some fifty years hence" (*Journal* 566-67). The tumult of progress had come to seem inevitable.

The expedition on the Upper Missouri at last allowed Audubon to pursue a lifelong ambition to explore the American West. When returning from London to the New World 12 years earlier in 1831, he had already formulated a goal for subsequent exploration that in the end proved to be unattainable: "He aimed first to visit the Florida peninsula and the islands off its east coast, then to explore the country

west of the Mississippi, before going on to Mexico, and if possible, continuing as far as California, crossing the Rocky Mountains and following the Columbia River to its mouth" (Hart-Davis 188). While such ambitious plans—reminiscent of the Corps of Discovery, led by Audubon's predecessors Lewis and Clark—exceeded his reach, in the course of his lifetime Audubon succeeded in completing an impressive number of collecting expeditions that spanned much of North America, floating the Mississippi twice in the 1820's alone, and later reaching the maritime provinces of present-day Canada. Yet none of that could have adequately prepared him for the tumultuous change as he would encounter on the Upper Missouri.

Making such a trip late in his life represented a personal pilgrimage for Audubon. Encountering the staggering natural abundance of the Great Plains he declared, "It is impossible to describe or even conceive the vast multitudes of these animals that exist even now," he wrote, "and feed on these ocean-like prairies" (*Journal* 725). As always, he was keenly interested in viewing animal behavior that might later animate his paintings of each species, as well as becoming familiar with representative landscapes that matched actual habitat. Yet despite such abundance he already sensed the possibility of eventual decline, much like the eradication of bison that he had personally witnessed further east decades earlier.

Audubon lamented how the once abundant buffalo of the Midwest had disappeared from the Indiana and Illinois prairies where herds had thrived in his youth. By the time he set out on foot in 1811 at 25 years of age, traversing the Illinois Territory for Henderson, Kentucky, he found the prairie already littered with skulls, horns, and bones of buffalo, a scene foreshadowing the carnage he would again encounter out West on the Upper Missouri three decades later (Rhodes *Making* 87). By 1843 the reverberations of westward settlement were already being felt on the Upper Missouri. He witnessed a number of profound changes underway: the arrival of white settlers, the removal of Indians, and the epic decline of wildlife. In the end, it necessitated reconciling visions of a pristine Western wilderness with a rapidly changing landscape—one in which wildlife and "wild" Indian tribes were both in precipitous decline.

The timing of the expedition on the Missouri could hardly have been more fortuitous, given that "an apparently endless supply of open land in the West had focused American attention on the wilderness, Audubon, as the 'American Woodsman,' seemed to personify all these interests in his bird and mammal paintings" (Tyler 139). The underlying premise of *Quadrupeds*, like the entire *Birds of America* enterprise, was to preserve for posterity a glimpse of the abundance that once was America. In the process, his own legacy became intertwined the natural world that had shaped his sensibilities as a conservationist. His awareness that even the most extensive tracts of wilderness were ultimately susceptible to development adds a sense of gravity—perhaps urgency—to chronicling wildlife in his time. Bachman urged him to keep copious and accurate notes of his observations of wildlife as a prerequisite to professional credibility: "Everything... you write about them will be new. In a word give a true history of every species that inhabits the plains & mountains—the earth, rocks, & trees. This is the duty of the Naturalist" (Tyler 154). While his account of the journey in the *Missouri River Journals* dutifully cataloged specimens collected, birds sighted, and game taken as a matter of course, it also portrayed frontier communities and remnant Indian bands then undergoing dramatic transformation.

Even while striving for scientific credibility in works such as *The Viviparous Quadrupeds of North America,* Audubon often indulged in seemingly serendipitous narratives as if seeking to establish authority based on the extent of his experience observing animals in their natural habitat, as Lawrence Buell points out: "being a serious work of natural history intended to pass muster with zoologists.

Certain portions of their entries are cut-and-dried: on description, color, dimensions, range. But the sections on 'habits' and 'general remarks' stretch out to what seems a delightful infinity" (415). Such passages at times provide a vehicle for reflections on habitat loss and wildlife decline as well their impact on both wildlife and indigenous peoples. Audubon clearly understood that incorporating anecdotal material could potentially make his books more appealing than the relatively lifeless recitation of scientific information alone, painting birds actively engaged with their natural surroundings and later leavening his written descriptions of birds with narrative accounts of his experiences afield, targeting a much wider audience both in the United States and abroad who shared a fascination with the wild landscapes, indigenous peoples, and ongoing exploration of the American West. Writing more than a century and half after he lived, biographers continued to depict him in just the way Audubon would have wished, clad in the trappings of the "American Woodsman," in a transparent attempt to establish authority as a well-traveled field naturalist on the mercurial American frontier. As biographer Shirley Streshinsky suggests with Romantic overtones, Audubon "had traveled into the deep American forests wearing deerskin leather stockings and moccasins; he had hunted with the Indian, had witnessed the beginning of the destruction of the wilderness" (162).

Audubon was hardly alone in recognizing destruction of the natural world since declines in wildlife were immediately evident to trappers and traders as well as indigenous peoples dependent on the same species for subsistence. In fact, George Catlin had already called for setting aside a large territory for both wildlife and the "wild tribes" of Indians still thriving on the Western frontier in the 1830's. Perhaps Audubon's concern with the rapidly shrinking range of big game animals gave him perspective on the plight of Indians. His appraisal of the prospects and predicament of America's indigenous peoples would be forever altered as he witnessed firsthand the decimation of Indian nations by epidemics and dislocation in the wake of European exploration and settlement, conjoined with receding herds of once unimaginably abundant buffalo. Viewing both as the original and rightful inhabitants of America's wilderness provided an apt counterpoint to the doctrine of Manifest Destiny that sought to legitimize Westward expansion in the 19th century.

Conventional wisdom of Audubon's day was that Indian peoples were doomed. "Audubon believed that 'civilization' had been disastrous for the Indians; he was sickened by it, sorry for it, but like most men of his age, he accepted it as the inevitable toll taken by progress" (Streshinsky 350), a sentiment that might be characterized as a strain of fatalism: the assumption that for better or worse progress was destined to continue, accompanied by considerable collateral damage (e.g. Knott). Still he had watched the wasteful practices of white commercial and sport hunters with distain as herds were systematically slaughtered, only the hide or tongue taken, and the rest senselessly left to rot. Based on his travels on the Upper Missouri, he contrasted such destruction with the discretion of Indian hunting practices, reporting that "nothing is lost or wasted, but every part of the animal, by the skill and industry of the Indian, is rendered useful" (*Quadrupeds* 180). Audubon recognized that the traditional ways of the Plains Indians relying so heavily on the buffalo—a *single* species —for food, clothing, and shelter, were already being jeopardized. He realized that to eliminate the buffalo was to imperil these peoples, a policy deliberately perpetrated by the U.S. Cavalry under the likes of General William Tecumseh Sherman. If the buffalo herds were in effect the Indian's "commissary," to eradicate the herds was a tactic tantamount to plundering planted fields or torching stores of corn: faced with starvation, the tortured logic went, Indians would have little choice but to surrender.

Audubon chastised both commercial and sport hunters for decimating the herds of buffalo essential to the survival of indigenous peoples: "Thousands multiplied by thousands of Buffaloes," he wrote in his journals," "are murdered in senseless play, and their enormous carcasses are suffered to be the prey of

the Wolf, the Raven, and the Buzzard" (Audubon M. R. 1:508-9). The ethical imperative of preserving the natural integrity of habitat intersected directly with the protection of both endangered species and indigenous peoples that subsisted on such resources. Like others who witnessed the transformation of the Western frontier between 1830 and 1860, he was initially at a loss to comprehend the extent and pace of such change. As environmental journalist Michael Harwood observes in *On the Road with John James Audubon*,

> To be fair, no man knew or could visualize exactly what was happening in fur country; events were moving too fast and haphazardly. The fur trade had revolutionized the life of the western Indians in the short space of four decades. So had the westward displacement of eastern and middle-western tribes. And in 1837—five years after Catlin visited—the smallpox had come north with the annual fur company boat and killed thousands of Indians, reducing some villages and tribes to only a few families. (Durant, 564-5)

At the very moment his adopted country was burgeoning westward, Audubon anticipated just how high the stakes could eventually become environmentally, including the very real possibility of extinction, as he wrote of the bison in *the Missouri River Journals*: "Even now there is a perceptible difference in the size of the herds, and before many years the Buffalo, like Great Auk, will have disappeared; surely this should not be permitted" (*Audubon Reader* 241)[6]. He had witnessed in the span of a single lifetime the range of wildlife dependent on wilderness reduced dramatically, including timber wolves, grizzly bears, and above all the iconic bison. The destruction of habitat, coupled with the eradication of animals, was already for Audubon an all too familiar chain of events: "Audubon was smelling the slaughter that three decades later would reduce the North American bison nearly to extinction. He may have connected the casual slaughter he saw with slaughter he had witnessed of passenger pigeons, which flocked in even greater numbers than the buffalo" (Rhodes *Making* 428).

While the *Missouri River Journals*, subsequently echoed in *Quadrupeds*[7], provide perhaps the most striking statement of his increasing concern with conservation, Audubon had expressed similar sentiments repeatedly in previous writings as well. His views on conservation and habitat preservation had clearly developed throughout his career. How had he come to understand that habitat loss during his lifetime had led to decreases in the historical range of species? As early as 1821, in a journal he kept while floating the Mississippi River, Audubon described both the abundance of birds, "the passage of millions of golden plovers," and the alarming numbers gunned down in a single day: "the sportsmen are here more numerous and at the same time more expert at shooting on the wing… assembled in parties of from 20 to 1000 at different places where they knew by experience they told me the birds pass... A man near where I was seated had killed 63 dozens—from the firing before & behind us I would suppose that 400 gunners were out. Supposing each man to have killed 30 dozens that day 144,000 must have been destroyed" (*Audubon Reader* 196). Assuming that such a scene were to be repeated at intervals along a migration flyway, it is easy to imagine how quickly entire populations of even the most numerous species might be threatened. As Harwood observes, while "the journal of 1820-21 contains the earliest surviving writing about birds," Audubon actually kept such journals of his expeditions and exploits for better than two decades, "filling them with observations and sketches, and he would eventually draw on this rich collection as he wrote the *Ornithological Biography*" (Durant 178). Decrying the "profligacy of frontier hunters" became a lifelong refrain (Rhodes *Making* 56).

As biographer Duff Hart-Davis observes, "For a modern reader, some of the most haunting passages are those in which the author described the pristine nature of the wilderness along the Ohio when he first

knew it, and lamented the destruction which was already taking place" by the 1820s (184). "The Ohio," just such a nostalgic "episode" that appeared in the first volume of *Ornithological Biography* in 1831, reads like a Romantic creed lamenting the tradeoffs made in the name of *progress*:

> When I think of these times, and call back to mind the grandeur and beauty of those almost uninhabited shores… unmolested by the axe of the settler... when I see that no longer any Aborigines are to be found there, and that the vast herds of elks, deer and buffaloes which once pastured on these hills and in these valleys, making for themselves great roads to the several salt-springs, have ceased to exist…when I see the surplus population of Europe coming to assist the destruction of the forest, and transplanting civilization into its darkest recesses... a country that has been so rapidly forced to change her form and attire under the influence of increasing population. (*Audubon Reader* 25-6)

Even as a young man, Audubon's enthusiasm for protecting the natural world seemingly knew no bounds. As Robert Paxton recounts, "He knew enough of early industrialization in the United States to foresee the end of nature there. He imagined summoning Sir Walter Scott…to describe American nature" so as to celebrate wilderness still unspoiled and plead for its preservation (32). In a journal he had kept while living in England in 1826, Audubon rehearsed what he hoped to communicate to Scott, whom he had not yet met, and whose support he evidently wished to enlist for commemorating nature in the New World, and the cause of preserving America's wilderness. He undoubtedly craved the endorsement of such a high-profile figure, arguably one of the most well-known and widely read novelists of his time throughout the English-speaking world including North America. In that journal Audubon declared, "Wrestle with mankind and stop their increasing ravages on Nature and describe her now for the sake of future ages. Neither this little stream, this swamp, this grand sheet of flowing water, nor these mountains will be seen a century hence as I see them now…. Fishes will no longer bask on the surface, the eagle scarce ever alight, and these millions of songsters will be drove away by man" (in Streshinsky 191). As Rhodes concludes, Audubon already "recognized that one consequence of this invasion was a decline in bird populations" (*Making* 331). He was equally aware of threats to other wildlife as species after species succumbed to overhunting and destruction of habitat in various locales.

In the Great Pine Swamp in northeastern Pennsylvania on a six-week collecting expedition in the late 1820's, Audubon watched with dismay the pace of logging operations felling the forest of the Lehigh River watershed. "Before population had greatly advanced in this part of Pennsylvania," he observed, "game of all descriptions found within that range was extremely abundant. The elk did not distain to browse on the shoulders of the mountains, near the Lehigh. Bears and the Common Deer must have been plentiful" (*Audubon Reader* 68). So too the turkeys, pheasant, and grouse. Yet already, rivers once teaming with fish were now clogged with rafts of logs floating to mills and downstream to lumber markets as distant as Philadelphia. Audubon wrote: "No sooner was the first sawmill erected than the axemen began their devastations. Trees one after another were, and are yet, constantly heard falling during the days; and in calm nights the greedy mills told the sad tale, that in a century the noble forest around should exist no more" (*Audubon Reader*). Such intensive logging operations, he understood, would rapidly degrade the landscape, destroying the habitat for wildlife that provided sustenance for settlers dependent on such subsistence resources.

Similarly, when traveling through Maine en route to Labrador in 1833, Audubon again recoiled at the violence of such logging operations, describing how they could savage a watercourse: "Logs rolled, reared, tossed and tumbled amid the foam… emblem of wrack and ruin, destruction and chaotic strife....

from out the frightful confusion of the scene came a melancholy feeling that did not entirely leave me for many days" (*Audubon, By Himself* 215). Moreover, Audubon understood that the "virgin," old-growth forests being cleared would not regrow the same: "Whenever the first natural growth," he wrote in his journal during an expedition to Labrador, "is destroyed by fire, or the axe, or by the hurricane, another of quite a different kind springs up" (Ford *Himself* 220). He recognized not only that the younger trees of such second growth would be dwarfed in comparison to the original woodlands, but that conifers were typically replaced by a mixture of slower growing hardwoods: a different kind of forest entirely.

Audubon's grasp of environmental history is evidenced from the first pages of the *Ornithological Biography* as well as the *Birds of America* portfolio itself. Consider the fact that Audubon selected the Turkey as the very first of 435 plates to be engraved and published. He clearly hoped to open each successive volume of *Birds* to be released with a particularly striking image so as to heighten the anticipation of subscribers. The dramatic, life-sized likeness of the turkey as an iconically American bird would fit the bill.[8] Yet he had deliberately chosen this spectacular image to lead off the entire portfolio for another important reason: in order to explain changes that he had witnessed in its range in great geographic detail.

> The unsettled parts of the States of Ohio, Kentucky, Illinois, and Indiana, an immense extent of country to the north-west of these districts, upon the Mississippi and Missouri, and the vast regions drained by the rivers from their confluence to Louisiana, including the wooded parts of Arkansas, Tennessee, and Alabama, are the abundantly supplied with this magnificent bird. It is less plentiful in Georgia and the Carolinas, becomes still scarcer in Virginia and Pennsylvania, and is now very rarely seen to the eastward of the last mentioned States. In the course of my rambles through Long Island, the State of New York, and the country around the lakes, I did not meet with a single individual. (*Audubon Reader* 89)

Since habitat destruction and overhunting had led to population decline, its diminishing range provided a case study in the need for habitat preservation, And herein lies the premise of the *Birds of America* project as a whole: to preserve for posterity a glimpse of the America's natural abundance that was already imperiled, a recurring motif throughout Audubon's later writings.

Audubon was an extraordinarily attentive if largely self-taught naturalist, cited by his contemporaries including Henry David Thoreau (Buell 100, 393, 415; Harding). In fact, Charles Darwin cited only one other naturalist more frequently, mentioning Audubon in several of his most influential works including both *The Descent of Man* and *The Origin of Species* (Sanders 11, Rhodes *Making* 306). As Boehme observes, given his lack of formal education in the sciences, any claims of expertise were necessarily based on time in the wild instead: "Audubon's projects depended on his experiences as a field naturalist.... He promoted the position that his authority rested on his extensive field experience" (35). His conviction that natural history is most trustworthy when derived from personal experience in the wild defied the typical practices of the elite scientists and "closet naturalists" of his time. Still, he would strive for credibility and recognition of the scientific establishment throughout his career. Lacking academic credentials and connections, any claim to authority would have to be hard earned. Consequently, to lend to his publications aura of authenticity and authority, his publications characteristically emphasized accounts of experience observing wildlife in the field on his many collecting expeditions.

Audubon's extensive travels and lifelong devotion to studying birds allowed him to develop an unprecedented knowledge of many species. In the case of the ubiquitous Canada Goose, for example, he was uniquely positioned to describe the geographical extent of its breeding range based on personal acquaintance:

> It is found to breed sparingly at the present day, by many of the lakes, lagoons, and large streams or our Western Districts, on the Missouri, the Mississippi, the lower parts of the Ohio, on lake Erie, the lakes farther north, and in several large pools situated in the interior of the eastern parts of the States of Massachusetts and Maine. As you advance farther toward the east and north, you find it breeding more abundantly. While on my way to Labrador, I found it in the Magdeleine Islands... and in Labrador these birds breed in every suitable marshy plain. (*Audubon Reader* 151)

And he could depict variations in habitat in considerable detail having visited it himself: "for every hundred seen during the winter along our large bays and estuaries, as many thousands may be found in the interior of the country, where they frequent the large ponds, rivers, and wet savannahs" (*Audubon Reader* 155).

Similarly, Audubon could speak with authority about variations in the timing and routes of major migrations with remarkable particularity:

> Its departure is always determined by the advance of the season, and the vast flocks that winter in the great savannahs or swampy prairies south-west of the Mississippi, such as exist in Opellousas, on the borders of the Arkansas River, or in the dismal 'EverGlades' of the Floridas, are often seen to take their flight, and steer their course northward, a month earlier... during the winter months, they are keenly sensible to changes of temperature, flying north or south in search of feeding-grounds. (*Audubon Reader* 151-2, 160)

In terms of ecological memory, Audubon could delineate the historical range of a species and recognize how it had changed during his lifetime, incorporating stories of earlier settlers such as General George Clark who reported that seventy-five years earlier "wild geese were so plentiful at all seasons of the year, that he was in the habit of having them shot to feed his soldiers, then garrisoned near Vincennes, in the present State of Indiana.... the greater number [now] remove far north to breed" (*Audubon Reader* 156).

Audubon's enduring legacy stems in part from having documented the continent's wildlife in decline, most poignantly those species of birds that have since gone extinct. *Ornithological Biography* begins with an account of how the turkey's range was already beginning to dwindle, a cautionary tale of lost habitat. Several prints from these folio have have taken on profound environmental symbolism over time, perhaps above all the Passenger Pigeon, whose flocks were unimaginably abundant in Audubon's day. Ironically, among the images collectors still prize are species lost to extinction. In his seminal work *Wildlife in America*, Peter Matthiessen reports that in 1810 Alexander Wilson estimated a single flock flying over the Indiana Territory at 2,230,000,000. Traveling between Henderson and Louisville in 1813, Audubon himself witnessed a flock that he numbered at over a billion birds. Positively awestruck, Audubon declared it "a torrent—and with a noise like thunder... that presently resembled the coils of a gigantic serpent." Audubon's account goes on to suggest both the magnitude and the power of the

spectacle: "after having recorded 163 flocks in twenty-one minutes. The farther I proceeded, the more I met. The air was filled with Pigeons that obscured the light of noonday like and eclipse" (*Audubon by Himself* 70). Elsewhere, he likened the devastation of forests where such flocks roost to a natural disaster, "as if the forest had been swept by a tornado" (Rhodes *Reader* 69).

Biographer William Souder recounts how Audubon had marveled at such flocks filling the sky from horizon to horizon, puzzling over how to calculate their numbers—a mathematical word problem of unimaginable proportions. Audubon wrote,

> Imagine a column of passenger pigeons one mile wide, and assume this mile-wide flock passes overhead in three hours. If the birds are flying at 60 miles per hour, the whole flock could be visualized as occupying a rectangular area one mile wide and 180 miles long—180 square miles. Now assume a density of 2 birds per square yard... and you can figure the total number of birds at 1.1 billion. (154)

Given the dimensions of the flock described and the fact that Audubon was viewing just part of a still larger migration, their numbers may well have greatly exceeded his calculations. That such an abundant species could so swiftly become extinct must have seemed utterly unthinkable.

Years later, Audubon recalled the sight in *Ornithological Biography,* traveling downstream from the Ohio's confluence with the Salt River, he wrote, "Before sunset I reached Louisville.... The pigeons were still passing in undiminished numbers, and continued to do so for three days in succession…. The banks of the Ohio were crowded with men and boys, incessantly shooting at the pilgrims" (in Durant 30-1). Such wanton slaughter, of course, eventually contributed the population crash that ultimately led to their extinction. "On such occasions," he wrote in *Ornithological Biography*, "when the woods are filled with these Pigeons, they are killed in immense number, although no apparent dimunation ensues" (*Audubon Reader* 119). Audubon anticipated that the greatest threat was actually loss of habitat and despite staggering numbers of Passenger Pigeons, he recognized the very real possibility of their decline: "I have satisfied myself by long observation that nothing but the gradual diminution of our forests can accomplish their decrease" (Rhodes *Reader* 70). As Audubon had lamented as early as 1831 in the *Ornithological Biography*, the wild haunts he had wandered only decades before were already being lost to development. As Streshinsky concludes, "In less than a hundred years he would be proved right; as the woods were vastly diminished, the passenger pigeon became extinct" (88).

Likewise, the "Immense Flocks of Parakeets" that Audubon recorded in his early journals while floating the Mississippi in 1820-21 would be extinct within a hundred years (Durant 184). As early as the 1830's, when his account of the this species was published in *Ornithological Biography*, he recognized the population's steep decline: "along the Mississippi there is not now half the number that existed fifteen years ago" (Rhodes *Reader* 195). While this passage did not explicitly attribute the cause to human activities such as the impact of settlement, disruption of habitat, and extermination of flocks, Audubon's "observation that they are very rapidly declining in number and contracting in range implies a sense of loss" (Knott 39). So too the Ivory-billed Woodpecker: another chapter in the saga of America's lost natural abundance. Both birds were still sufficiently plentiful in 1830 that Audubon had no qualms about collecting skins of Ivory-billed Woodpeckers and Carolina Parakeets while sailing from New Orleans to Louisville, as specimens for scientific as well as artistic purposes: the seemingly paradoxical practice of 19th-century naturalists of "preserving" wildlife by shooting it first. Yet this was standard operating procedure in that era predating photography: "To study the creatures of the wild he had to

kill them.... neither he nor anyone else thought of this as indiscriminate slaughter; that perception came much later, when the destruction of the forests and the wanton shooting of wildlife destroyed some species, and brought others close to extinction" (Streshinsky 24-5).[9] At that historical moment, the illusion of inexhaustible abundance was yet to be widely questioned at "a time when vast flocks were commonplace and no one worried about limiting the number of birds shot" (Knott 40).

While retracing Audubon's expeditions in the 1970's, Harwood realized that "without the assistance of a miracle we wouldn't find any of the strikingly handsome crow-sized ivory-billed woodpeckers. In 1820 they were not only common in the Mississippi floodplain; in places they were the most evident, commonest woodpeckers" (Durant 184). By contrast, Audubon had described the impressive extent of its historic range as once encompassing Kentucky, Indiana, the Carolinas, Georgia, Alabama and Mississippi as well as "all" densely forested tributaries west of the Mississippi River. Yet the jury is still out on the status of this elusive species in the 21st century, as John Terborgh explains, "Even today, when extinctions are occurring with unprecedented frequency, they are extremely difficult to verify. The Ivory-billed Woodpecker is a prime example. The last substantiated photographs and sound recordings were made in the late 1940s, yet rumors about the bird's existence and fervent claims of sighting continue to emerge from the Southeast. Is the Ivory-billed Woodpecker extinct? No one can say" (35). Documenting a single extinction conclusively (let alone anticipating one) can be a vexing task indeed.

Audubon had even railed against the extermination, by bounty hunters and farmers, of birds commonly considered to be pests such as the common Crow. As late as the 1930's, government-sponsored eradication programs were still common, such as a single operation employing dynamite in Illinois credited with eliminating in excess of 300,000 crows (Bent 256). Audubon's logic was unimpeachable: given the "superabundance" of food in North America compared with "other countries nearly exhausted by long continued cultivation," surely, he reasoned, "a portion may well be spared for the feathered beings" (Rhodes *Reader* 78). I would argue that despite its homespun diction, this passage represents the germ of a full-fledged conservation ethic. Here, Audubon anticipates the core argument advanced by Perkins Marsh decades later in *Man and Nature*. As Rhodes points out, the preservation of wildlife is a recurrent theme that echoes throughout Audubon's writing, though likely heightened with time, as he sensed the extent of development taking place on the 19th-century frontier—and the portent of environmental degradation:

> In several of his bird biographies Audubon pleads with his readers to spare the lives of species of birds such as Crows and Carolina Parrots that were treated as vermin because they fed on farmers' crops. As he grew older his concern for wildlife conservation increased, less because his perspective changed, as some biographers have speculated, than because he saw the exploitation of the primordial American wilderness accelerating with the accelerating increase of population in the trans-Appalachian West. (Rhodes *Reader* 77)

Audubon expressed dismay at how such commercial exploitation, if left unchecked, would inevitably threaten even the most abundant wildlife populations, the integrity of habitat, and the indigenous peoples who rely on such resources for subsistence. Traveling in Labrador during the summer of 1833—fully ten years before the Missouri River expedition, he found the "abundance of fish" in the Bay of Fundy to be "downright astonishing," exceeding even what he had witnessed previously in Florida. Yet he reported that rampant overharvesting already threatened to deplete the resource. He reported, for example, how a single fleet of "a hundred schooners have brought about 600,000 fish back," and

already the very next day would need to seek different waters "because the fish will have grown scarce." To make matters worse, undersized fish were routinely left "to Bears, Wolves, and Ravens on shore" rather than being returned to the water, a "not quite lawful" practice he deemed reprehensible (Ford *Himself* 229, 230).

For Audubon, Labrador offered yet another example of how even natural abundance of unimaginable magnitude was still vulnerable to exploitation and destruction. He and his companions were astonished by the immensity of flocks of water fowl such as Gannets: "I rubbed my eyes, took my spyglass, and in an instant the strangest picture stood before me. They were birds we saw,--a mass of bird of such a size as I never before cast my eyes on. The whole of my party stood astounded and amazed" (*Audubon Reader* 216). "The air was now filled with Velvet Ducks," he wrote, "millions of these birds were flying from the northwest toward the southeast" (in Hart-Davis 202). The sight of such a migration inspired awe: "That the Creator should have commanded millions of delicate, diminutive, tender creatures to cross immense spaces of country... is as wonderful as it is beautiful" (*Audubon Reader* 219).

Audubon was alarmed by the exploitation of nature he witnessed in Labrador: such extensive "egging, trapping, sealing, fishing, [and] hunting… that populations of furbearers and birds were both already threatened" (Durant 443). In his journals he warned about the dire consequences of such unbridled exploitation: "Fur animals are scarce [and] every year diminishes their numbers. The Fur Company may be called the exterminating medium of these wild and almost uninhabitable climes" (Durant 443). Audubon described this relentless brutality in "The Eggers of Labrador," an episode published in *Ornithological Biography*, as well as the likely long-term ecological consequences: "So constant and persevering are their depredations, that these species, which, according to the accounts of the few settlers I saw in the country, were exceedingly abundant twenty years ago, have abandoned their ancient breeding places, and removed much farther north... nature having been exhausted... This war of extermination cannot last many years more" (*Audubon Reader* 82). As Knott concludes, Audubon "saw himself as recording a wilderness that was inexorably receding" (190). In fact, he predicted that these nurseries on the Gulf of St. Lawrence, if left unprotected, would vanish within fifty years (Rhodes *Making* 383).

At this remote, northern outpost, Audubon had pondered the ethical implications of such unmitigated development, writing in his journal:

> The beings best fitted to live and prosper here, not only of our species, but of all species, and also the enormous destruction of everything here… For as the Deer, the Caribou, and all other game is killed for the dollar which it skin brings in, the Indian must search in vain over the devastated country…We are often told rum kills Indians; I think not; it is oftener the want of food, the loss of hope as he loses sight of all that was once abundant.... Nature herself seems perishing…. When no more fish, no more game, no more birds exist on her hills, along her coasts, and in her rivers, then she will be abandoned and deserted like a worn-out field. (Durant 443)

Audubon's understanding of how rapidly the historical range of wildlife populations could be reduced by settlement stemmed directly from his grasp of environmental history and ecological memory. He had witnessed the destruction of forests and fisheries as well as the widespread decline of wildlife including major species such as the Canada Goose and wild Turkey as well as several extinct today: Passenger Pigeon, Carolina Parakeet, and presumably the Ivory-billed Woodpecker. And the threats to natural

abundance posed by development only continued to grow toward the end of his career. Perhaps as much as any naturalist before or since, his grasp of environmental history was grounded in personal experience in the field. By the time Audubon arrived on the Upper Missouri in 1843, his values in regard to preserving wildlife and habitat had been forged by writing for decades about his observations in the wild. While journals from the last collecting expedition reveal deepening convictions about accelerating threats to wildlife, his previous writings had repeatedly addressed these issues as well. Moreover, journals recorded on earlier expeditions throughout this career–from Louisville to New Orleans, from Florida to Labrador, long before ascending the Missouri–again and again conveyed narratives of environmental history depicting dramatic changes to the landscape then underway.

While his awakening to the ecological perils of development may have happened incrementally with intermittent flashes of insight, there seemed a steady deepening of his appreciation for such issues and a sense of their growing scope. As Knott recounts, "Audubon did display increasing concern about the decline of wilderness and of the kind of abundance that was commonplace when he began his wanderings" (42). After chronicling the shrinking range of particular species, faced with the prospect of absolute extinction, his predictions gradually grew more extreme and warnings more dire, such as this one from the first volume of *Ornithological Biography*: "When the margins of our rivers shall have been drained and ploughed to the very tide mark… Turkeys shall no longer be met with in a wild state" (in Knott 42-3). Such elegiac passages offer a poignant lament for the destruction of habitat and its impact of wildlife.

In the centuries since Audubon lived, the extent of such disruption to natural ecosystems has relentlessly increased throughout North America, often with deleterious effects on indigenous species. Yet during the first half of the 19th century he already recognized threats to environmental integrity and biodiversity long before such concepts were articulated by 20th-century ecologists. He understood that the range and behavior of birds including nesting and migration were subject to change, and that unchecked exploitation could eradicate wildlife. As Streshinsky concludes, "Today Audubon's name is synonymous with the conservation movement. In his time, the woods and skies, the rivers and oceans were filled with birds and animals and fish [yet] his writing echoes with warnings; he saw the changes civilization wrought, and he was among the first to sound the alarm" (xviii-xix). Based on his own extensive observations of nature's abundance and destruction throughout North America, Audubon anticipated the broad outlines of conservation in many ways consistent with principles of environmental protection in our time.

Fundamental to these understandings, as prescient as they seem today, was Audubon's extraordinary sense of ecological memory. Based on observations of the changing range of wildlife populations during his own lifetime, he could extrapolate to consequences for the continent as a whole and recognized what was at stake for future generations. Even today, as ecologists call for contiguous corridors of habitat in the Rocky Mountain West to ensure the survival of threatened wildlife–and conservationists advocate similar measures in virtually every region of North America he had traveled–we follow a trail Audubon blazed.

Endnotes

---

1 "Audubon Reader" indicates the collection of Audubon's writings edited by Scott Russell Sanders as distinguished from "The Audubon Reader" edited by Richard Rhodes.
2 While there is speculation that some writings attributed to Audubon that were published posthumously may have been altered by subsequent editing, the extent–and intent–of
such purported revisions remains open to conjecture, particularly in those cases in which the original manuscripts in Audubon's hand have been lost or destroyed (Patterson).
3 Current estimates for avian extinctions over the last 400 years have reached 90 species plus 60 subspecies, often attributed to habitat loss and overhunting. (Chansigaud, 207)
4 While the term ecological memory has been employed in a wide variety of disciplinary contexts ranging from landscape architecture and restoration to ethnobotany (see Nazarea), it is intended here in a more generalized descriptive sense corresponding to narratives of environmental history.
5 Quotations from Audubon's writings such as journals are presented as they appear in cited source materials with orthographic idiosyncrasies intact.
6 During Audubon's lifetime (1785-1851) the Great Auk, long victim of overhunting for meat and feathers, was believed to have gone extinct in 1844 with the collection of two final specimens (Cokinos). Only a single, scientifically accepted, subsequent sighting was reported in 1852 (BirdLife / IUCN).
7 While there is evidence that these texts may have been reworked by editors when being prepared for publication after Audubon's lifetime (by co-author John Bachman for The Quadrupeds of North America, first published 1851-54; and by Maria Audubon for the 1897 edition of the Missouri River Journals), determining the nature of specific revisions remains the focus of ongoing archival research (Patterson).
8 Audubon notes reverently in Ornithological Biography that founding figure Benjamin Franklin actually favored the turkey over bald eagle as the country's official symbol.
9 Occasionally in more reflective moments, Audubon confided that taking specimens for science was not free of regret, such as when he collected a Spruce Partridge in Labrador: "Her very looks claimed our forbearance and clemency, but the enthusiastic desire to study nature prompted me to destroy her, and she was shot, and her brood secured in a few moments" (Audubon Reader 218).

Works Cited

Audubon, John James. *The Birds of America*. New York: Macmillan, 1941.
—-. *Audubon's Birds of America: The Audubon Society Baby Elephant Folio*. New York: Audubon Society, 1991.
—-. *Audubon Reader: The Best Writings of John James Audubon*. Ed. Scott Russell Sanders. Bloomington, IN: Indiana UP, 1986.
—-.*Audubon, By Himself: A Profile of John James Audubon*. Ed. Alice Ford. Garden City, NY: American Museum of Natural History, 1969.
—-. *John James Audubon: Writings and Drawings*. Ed. Christoph Irmsher. New York: Library of America, 1999.
—-. *The 1826 Journal of John James Audubon.* Ed. Alice Ford. New York: Abbeville, 1987.

—-. *John James Audubon's Journal of 1826: The Voyage to The Birds of America.* Ed. Daniel Patterson. Lincoln: U Nebraska P, 2011.

—-. *The Audubon Reader*. Ed. Richard Rhodes. New York: Everyman's, 2006.

—-. *The Viviparous Quadrupeds of North America*. Edison, NJ: Wellfleet, 2005.

Begossi, Alpina. "Use of Ecological Methods in Ethnobotany: Diversity Indices." *Economic Botany 50*(3), 280-89, 1996.

Bent, Arthur Cleveland. *Life Histories of North American Jays, Crows, and Titmice.* New York: Dover, 1988.

BirdLife International 2012. *Pinguinus impennis*. In: IUCN 2012. IUCN Red List of Threatened Species. Version 2012.2. <www.iucnredlist.org>. Downloaded on 11 June 2013.

Birkhead, Tim. *The Wisdom of Birds: An Illustrated History of Ornithology*. New York: Bloomsbury, 2008.

Boehme, Sarah. *John James Audubon in the West: The Last Expedition and Mammals of North America*. New York: Abrams, 2000.

Branch, Michael. "Indexing American Possibilities: The Natural History Writing of Bartram, Wilson, and Audubon." *The Ecocriticism Reader: Landmarks in Literary Ecology*. Ed. Cheryll Glotfelty and Harold Fromm. Athens, GA: U of Georgia P, 1996. 282-302.

Buell, Lawrence. *The Environmental Imagination: Thoreau, Nature Writing, and the Formation of American Culture*. Cambridge, MA: Harvard UP, 1995.

Catlin, George. *Letters and Notes on the Manners, Customs and Conditions of North American Indians*. New York: Dover, 1973.

Chansiguad, Valerie. *The History of Ornithology*. London: New Holland, 2009.

—-. *North American Indians*. Ed. Peter Matthiessen. New York: Penquin, 1989.

Cokinos, Christopher. *Hope is the Thing with Feathers: A Personal Chronicle of Vanished Birds*. New York: Tarcher, 2000.

DeVoto, Bernard. *Across the Wide Missouri*. Boston: Houghton, 1947.

Durant, Mary and Michael Harwood. *On the Road with John James Audubon*. New York: Dodd, 1980.

Ewers, John. *George Catlin: Painter of Indians of the West*. Washington DC: Smithsonian, 1955.

Flannery, Timothy. *The Eternal Frontier: An Ecological History of North America and its Peoples*. New York: Atlantic, 2001.

Ford, Alice. *John James Audubon: A Biography*. New York: Abbeville, 1988.

Glotfelty, Cheryll and Harold Fromm, eds. *The Ecocriticism Reader*. Athens, GA: U of Georgia P, 1996.

Halpin, Marjorie "Introduction." *Letters and Notes on the Manners, Customs and Conditions of North American Indians*. New York: Dover, 1973.

Harding, Walter and Michael Meyer. *The New Thoreau Handbook.* New York: New York UP, 1980.

Hart-Davis, Duff. *Audubon's Elephant: America's Greatest Naturalist and the Making of the Birds of America*. New York: Holt, 2004.

Hassrick, Royal B. *The George Catlin Book of American Indians*. BBS, 1994.

Herrick, Francis. *Audubon the Naturalist: A History of his Life and Time*. 1917. New York: Dover, 1968.

John James Audubon Museum, Henderson Kentucky. [http://parks.ky.gov/findparks/recparks/au/]

Knott, John. *Imagining Wild America*. Ann Arbor: U Michigan P, 2002.

Kohler, Robert. *All Creatures: Naturalists, Collectors and Biodiversity, 1850-1950*. Princeton UP, 2006.

Lindsey, Alton. *The Bicentennial of John James Audubon*. Bloomington, IN: Indiana UP, 1985.

Lopez, Barry. *Of Wolves and Men*. New York: Scribner's, 1978.

Lopez, Barry. *About this Life: Journeys on the Threshold of Memory*. New York: Vintage, 1998.

Marsh, George Perkins. *Man and Nature: Or, Physical Geography as Modified by Human Action*. Seattle, WA: U of Washington P, 2003.

Matthiessen, Peter. *Wildlife in America*. New York: Viking, 1959.

McCracken, Harold. *George Catlin and the Old Frontier: A Biography and Picture Gallery of the Dean of Indian Painters.* 1959. New York: Bonanza, 1984.

Mcdermott, John Francis, ed. *Up the Missouri with Audubon: The Journal of Edward Harris*. Norman, OK: U of Oklahoma P, 1951.

—-. *Audubon in the West*. Norman, OK: U of Oklahoma P, 1965.

Patterson, Daniel. "The Forgotten Western Journals of John James Audubon and Their Implications for his Conservationist Legacy." Association for the Study of Literature and the Environment (ASLE). Lawrence, Kansas, 28 May - 1 June, 2013.

Nazarea, Virginia. "Local Knowledge and Memory in Biodiversity Conservation." *Annual Review of Anthropology 35*: 317-35, 2006.

Paxton, Robert. "Birds: The Inner Life." *The New York Review*, 10 Jan. 2013: 30-2.

Peattie, Donald. *Audubon's America: The Narratives and Experiences of John James Audubon*. Cambridge, MA: Houghton, 1940.

Peck, Robert. "Audubon and Bachman: A Collaboration in Science." *John James Audubon in the West: The Last Expedition and Mammals of North America*. Ed. Sarah Boehme. New York: Abrams, 2000. 71-118.

Peterson, Nancy. *People of the Troubled Water: A Missouri River Journal*. Beverly Hills, CA: Renaissance, 1988.

Rhodes, Richard. *John James Audubon: The Making of an American*. New York: Knopf, 2004.

Ronda, James. *Lewis and Clark among the Indians*. Lincoln, NE: U of Nebraska P, 2002.

Souder, William. *Under a Wild Sky: John James Audubon and the Making of Birds of America.* New York: North Point, 2004.

Streshinsky, Shirley. *Audubon: Life and Art in the American Wilderness*. New York: Villard, 1993.

Terborgh, John. "Why We Must Bring Back the Wolf." *New York Review of Books*, 15 July 2010: 35-7.

Trachtenberg, Alan. *Shades of Hiawatha: Staging Indians, Making Americans*, 1880-1930. New York: Hill and Wang, 2004.

Tyler, Ron. "The Publication of *The Viviparous Quadrupeds of North America*." *John James Audubon in the West: The Last Expedition and Mammals of North America*. Ed. Sarah Boehme. New York: Abrams, 2000. 119-182.