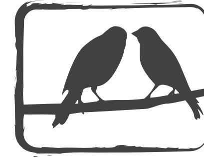

Shakespeare's Starlings

Literary History and the Fictions of Invasiveness

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Abstract Scientists, environmentalists, and nature writers often report that all common starlings (*Sturnus vulgaris*) in North America descend from a flock released in New York City in 1890 by Eugene Schieffelin, a man obsessed with importing all the birds mentioned by Shakespeare. This article uses the methods of literary history to investigate this popular anecdote. Today starlings are much despised as an invasive species that displaces native birds and does almost a billion dollars worth of damage to agriculture annually. Because of the starling's pest status, the Schieffelin story is considered a cautionary tale about the dangers of ecological ignorance. Diving into the history of the Schieffelin story reveals, however, that it is almost entirely fictional. Tracing how its elements emerged and changed over a century of retelling clarifies how the story came to shore up uncertainties in the bird's environmental history and to distract from the lack of data supporting the starling's supposedly disastrous impacts. In explaining how a fiction repeated over time attained the status of fact in debates about invasive species, this literary history suggests humanistic methods can serve as useful tools for understanding the value-laden narratives underpinning environmental attitudes and practices today.

Keywords animal studies, invasive species, cultural history, environmental history, narrative studies

On March 6, 1890, a wealthy socialite named Eugene Schieffelin released one hundred common starlings (*Sturnus vulgaris*) into Central Park in New York City. The release was part of Schieffelin's decidedly eccentric effort to introduce to the United States all the birds mentioned in Shakespeare's works. Although most of his imports died out, the starlings flourished—only to become one of the most destructive invasive species in North America. They can now be found across the continent, outcompeting native birds and doing hundreds of millions of dollars worth of annual damage to American agriculture.[1]

1. The date is usually reported as March 6 or March 16, 1890. Similar to the numbers of birds supposedly released, it varies by account. The closest historical sources would suggest Schieffelin released forty pairs two

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That, in any case, is the story told by scientists and nature lovers today. The anecdote has become such a classic in the annals of environmentalism that it is considered "part of birding's folklore."[2] It has been promulgated by the American Museum of Natural History (AMNH) and the Smithsonian, and it regularly graces the pages of news outlets such as the *Washington Post*. Science writers include it as a showpiece in books on environmental destruction, while literary scholars use it to theorize the ecological impact of Shakespeare's work.[3] In all cases it appears as a cautionary tale about the dangers of ecological ignorance and of invasive species in particular—"Example A," as one nature writer puts it, "of the lack of wisdom of introducing foreign species of wildlife without careful consideration."[4]

Yet the real moral is more complicated, because the Schieffelin story is more fiction than fact. Only a few elements of the narrative are verifiable. It is true that a man named Eugene Schieffelin helped introduce foreign birds to North America. The evidence suggests, however, that his role in the starling's success has been overstated and his obsession with Shakespeare is entirely fabricated. The ravages of the starling have been inflated in a similar fashion. So far, empirical studies of the bird's impact indicate starlings are at worst a negligible nuisance to traditional agriculture and native birds; for farmers, they may even be beneficial.

The fact that the tale is fictional, however, does not make it less significant. Because of its quirky appeal the anecdote has had outsized effects on humans and starlings alike. It has been used to fuel aggressive eradication campaigns and general ill will, and it has helped shape broader approaches toward introduced species. Scientists, environmentalists, and government officials opposed to introduced species typically frame their position as one of hard-nosed realism—a data-driven approach to wildlife management that contrasts with the sentimentalism of their opponents. The Schieffelin story is called on to enforce this distinction between the supposedly objective case for eradicating invasives and the well-intentioned ignorance of amateurs. Its central character, after all, is a hapless dabbler whose literary passions cloud his understanding of the dangers of invasive species.

Ironically, it takes a literary investigation of this tale to understand how it came to seem authoritative despite the dearth of data supporting it. Tracing the history of the

years in a row, beginning on March 6, 1890. See Chapman, *The Economic Value of Birds*, 41; and Phillips, *Wild Birds*, 54. For more examples of this story, see note 3. Although Americans often refer to *Sturnus vulgaris* as the European starling, we use the more universal name common starling.

2. Lamb, "What If We Had All the Birds . . . ?"

3. For scientific institutions, see Debczak, "Scientists Study the Starling Invasion"; Zielinski, "The Invasive Species We Can Blame on Shakespeare." For journalism, see Taft, "European Starling, The Bard's Bird"; Pancake, "A Day of Starling Revelations." For science writers, see Cocker, *Birds and People*, 460–63; Haupt, *Mozart's Starling*, 54–57; Kolbert, *The Sixth Extinction*, 211; Schilthuizen, *Darwin Comes to Town*, 97–98; and Todd, *Tinkering with Eden*, 135–47. For literary critics, see Karnicky, *Scarlet Experiment*, 45, 67; Mitchell, "The Bard's Bird," 171–81; and Phillips, "Shakespeare and the Great Starling Disaster," 27.

4. Teale, "The Upsetting Mr. Schieffelin," 8.

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Schieffelin story clarifies the inspirations behind it, highlighting the political and scientific developments that led to its widespread acceptance. This investigation also drives home the importance of literary structures to purportedly nonliterary discourses, demonstrating that humanistic methods can be as valuable as scientific training to a comprehensive understanding of our current ecological situation. The true moral of the Schieffelin story, then, has less to do with the dangers of meddling with natural order than with the error of obsessively policing man-made borders. Whether such borders cordon off supposedly pristine ecosystems or supposedly pristine forms of objective knowledge, the literary history of Schieffelin's starlings suggests that such boundaries are artificial and that they are always already compromised.

Doubtful Origins: Introducing the Starling, ~1870–1900

Schieffelin really did play a part in releasing starlings in Central Park in 1890–91. Far from being the bird's first introduction, however, these releases were among the last. Within a decade, the Lacey Act of 1900 would prohibit the unregulated introduction of nonnative species to the United States. Representative John F. Lacey, the bill's sponsor, singled out "the fruit bat, the flying fox, the English sparrow, the starling and other birds of that kind" as species the government "may regard as detrimental" and could prohibit from entering the country.[5] For decades prior to Schieffelin's release, however, individuals and organizations from Ohio to Oregon repeatedly imported starlings and released them in what almost amounted to a craze for starling liberations.

While later accounts ascribe Schieffelin's introduction to his idiosyncratic interests, then, his action was neither original nor isolated. It was part of a larger practice of introducing species to new environments, one promoted by the acclimatization movement that flourished during the nineteenth century. Moreover, as the Lacey Act demonstrates, concern about the starling's impacts long pre-dated the rise of environmentalism and conservation biology in the late twentieth century. Returning to nineteenth-century accounts of starling introductions puts Schieffelin's actions in perspective, clarifying both why his significance is doubtful and what led early alarmists to latch onto it anyway.

The precise arrival of the starling in North America is shrouded in mystery. Several early twentieth-century accounts point to the 1840s, when "efforts were made . . . by a Mr. Gorgas to plant European starlings in Chester [C]ounty, Pa."[6] This is probably an error: one John Gorgas introduced skylarks to that area in 1853, not starlings.[7] By the 1870s, however, starling introductions were well underway. According to the former president of the Acclimation Society of Cincinnati, between 1872 and 1874 the society released about four thousand European birds, including starlings.[8] Later sources mention

5. *Congressional Record*, 31:4871.

6. Warren, "The European Starling," 11. See also Cooke, *The Spread of the European Starling*, 2.

7. Palmer, "A Review of Economic Ornithology," 288.

8. "Introduction of European Birds," 342.

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another introduction shortly afterward in Quebec.[9] New York followed: in November 1877 the Central Park Menagerie's William Conklin gave a talk at the American Acclimatization Society—headquartered in New York City and chaired by Schieffelin—that detailed nationwide efforts to import "birds which were useful to the farmer and contributed to the beauty of the groves and fields." Among these efforts, he noted that "last July the Acclimatization Society freed in the Park some starlings and Japanese finches. . . . It was expected that they would all prosper."[10]

The word that crops up in several of these accounts—*acclimation* or *acclimatization*—serves as a reminder that these organizations were part of a project that spanned the globe. The acclimatization movement was an international phenomenon composed of gardeners, scientists, animal breeders, and hobbyists interested in exploring how organisms from one region might adapt themselves to the climatic conditions of another. Popularized in the 1850s by the French naturalist Isidore Geoffroy Saint-Hilaire, the movement's early adherents believed that the study of species in new environments could provide insights into physiology and the change of species over time. Acclimatization thus constituted an early form of evolutionary thought, one that contested traditional beliefs in fixed species created by God.[11]

Acclimatizers depended on the expansive and increasingly efficient imperial networks of trade that developed in the late eighteenth century to ship species between proponents in metropoles such as Paris and London and colonial settlements in Algeria, Australia, New Zealand, and India, among other places. As the movement spread from France across the channel and over the Atlantic its enthusiasts in more conservative Anglophone countries jettisoned the radical evolutionary aspect of acclimatization. They focused instead on the ways importing species could increase the beauty, diversity, and economic yield of the local environment—sometimes because they themselves had destroyed it.[12]

Popular accounts of the starling's arrival in the United States occasionally gesture at this context by mentioning earlier attempts to introduce the birds, but they dismiss such efforts as unsuccessful. It was the 1890 introduction that established the birds permanently, and all current birds descend from Schieffelin's imports—or so the story goes. Evidence for this claim is shaky at best. It is true that the first successful nesting attempts observed by naturalists happened after the 1890 introduction, but that may simply register the fact that one such attempt took place beneath the eaves of the AMNH.

9. Kalmbach and Gabrielson, *Economic Value of the Starling*, 4.

10. "American Acclimatization Society."

11. Anderson, "Climates of Opinion," 137–45.

12. For imperialism and acclimatization, see Osborne, "Acclimatizing the World," 135–51; Gillbank, "The Origins of the Acclimatisation Society," 359–74; and Ritvo, "Back Story," 18–30. For national differences in acclimatization, see Anderson, "Climates of Opinion," 146–51. For environmental remediation, see Tyrrell, "Acclimatisation and Environmental Renovation," 153–67. For an expansive popular survey, see Lever, *They Dined on Eland*.

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As this nest was right under (or above) the noses of a full-time staff of naturalists, they could not ignore the starling's presence any longer.

Later historians simply assume that this, the first recorded nesting success, was the first success in actuality. Yet there is reason to believe starlings were already naturalized in pockets around the United States before the 1890 release. Reports of wild flocks crop up in several locations by the 1880s. In his investigation in 1915 Edward Howe Forbush heard from a correspondent in Massachusetts that "four starlings were caught from a small flock on the estate of Mr. Stephen Salisbury on November 8, 1876" and later rereleased.[13] This report attests to the presence of starlings far removed from any recorded introductions, suggesting either that a successful undocumented release had occurred or that flocks were already established and roaming widely. Similarly, wild starlings in Tenafly, New Jersey visited "a tame starling there in a cage in 1884," which was subsequently freed to join its brethren.[14] The Tenafly incident implies not only that roving flocks were established near New York in the 1880s but also that releases and escapees from the transatlantic pet trade swelled such flocks. The evidence from Massachusetts and Tenafly has been overlooked because later sources miscategorize these records of wild flocks as failed attempts to introduce the bird, reinforcing the primacy of the 1890–91 releases.[15]

Occasionally authors claim that genetic analysis has traced all North American starlings back to Schieffelin's imports.[16] This claim never includes a source, so it is unclear how the idea originated. One high school science program at the AMNH has involved students in the genetic testing of starlings, and at least one magazine has described the lack of diversity that students uncovered as confirmation of the Schieffelin story.[17] But these high school experiments were not peer-reviewed, and a lack of genetic diversity in introduced species is typical; it does not confirm Schieffelin's birds as the source of all North American starlings. In fact, a recent study of the genetic diversity of North American starlings from the Cornell Lab of Ornithology notes that, while diversity is low, evidence for a genetic bottleneck of the kind associated with a single introduction is uncertain.[18]

If starlings were already naturalized in North America by 1890, it may seem strange that there is so little record of their presence. Yet there are several reasons why starlings were likely to go unnoticed. The first is rooted in the quirks of avian behavior: the unpredictable migratory habits of starlings make them difficult to track, so their release in one place provided no guarantee they would stay there.[19] The bird's erratic movements and its tendency to flourish in some environments and founder in others could lead to wildly

13. Forbush, *The Starling*, 10.

14. Forbush, *The Starling*, 10.

15. Bent, *Life Histories*, 183.

16. See, for example, Haupt, *Mozart's Starling*, 56.

17. Debczak, "Scientists Study the Starling Invasion." The page for the AMNH student mentoring project is archived at "Class of 2017—SRMP4Life."

18. Hofmeister, Werner, and Lovette, "Environmental Correlates."

19. Cooke, *The Spread of the European Starling*, 3. For more on starling behavior, see Cabe, "European Starling (*Sturnus vulgaris*)."

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uneven distributions.[20] The disappearance of an introduced flock, in other words, could simply be a sign of its having moved elsewhere, where it would not be recognized or recorded. Indeed, difficulties identifying the bird pose another problem for any history of its introduction. "The starling," the ornithologist May Thacher Cooke observed in 1928, "is constantly invading new territory and, as a consequence, is confused with birds long known, and is thus frequently misidentified."[21]

Difficulties recognizing and tracking the starling might have prevented interested observers from reporting its success in the United States even without any confounding cultural factors. But the reality is that interested observers were few and far between. For much of the nineteenth century, the most reliable method of studying birds involved comparing them against descriptions in "large, cumbersome volumes that were difficult to carry in the field and designed to be used only with the dead specimen in hand."[22] The first field guides did not become available until the late 1880s, and optics powerful and portable enough to make field identification reliable would not be commercially produced until the 1890s. Even then experts tended to dismiss sight records through the 1930s.[23] Lastly, among those rare individuals invested in identifying birds before the 1890s, the naturalization of foreign species was not a widespread concern.[24]

For most of the nineteenth century, then, starlings were unexpected, uninteresting to observers, difficult to identify, and hard to track as they moved between oblivious human communities. Something had to change if they were going to be noticed. That change came in the form of a smaller avian compatriot, the house sparrow (*Passer domesticus*). Like the starling, the house sparrow was deliberately introduced to the United States multiple times. Its benefactors hoped the sparrow would control a plague of inchworms on the eastern seaboard. While the sparrows initially appeared effective, they proved willing to feed on other foods as well—especially grains found in horse feed and manure. The inchworms soon rebounded even as the sparrows exploded in population, annoying city dwellers with their droppings, messy nests, and incessant tuneless cheeping. American backlash against the house sparrow confirmed a pattern that had already played out in other parts of the globe. In Australia, for example, controversies surrounding the house sparrow helped turn the tide of public opinion against terrestrial acclimatization by the 1870s.[25] Anger at the sparrow in America reached a fever pitch toward the end of the century as naturalists and government officials began to treat its success as representative of a larger pattern of introduced species wreaking havoc.[26]

20. Kalmbach and Gabrielson, *Economic Value of the Starling*, 7.

21. Cooke, *The Spread of the European Starling*, 2.

22. Barrow, *A Passion for Birds*, 156.

23. See Barrow, *A Passion for Birds*, ch. 7.

24. For short-lived concern earlier in US history, see Pauly, *Fruits and Plains*, 33–50. For the growing federal concern at the end of the 1800s, see Pauly, *Biologists and the Promise of American Life*, 71–92.

25. Minard, *All Things Harmless*, 108–10, 119–20.

26. On the house sparrow's introduction and the "Sparrow Wars" that followed, see Coates, *American Perceptions*, 28–70.

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The end of the nineteenth century thus constituted an unusual historical moment, a time when the introduction of plants and animals was permissible but increasingly controversial. The window of opportunity for this kind of public introduction closed shortly afterward with the passage of the Lacey Act. Yet as Philip J. Pauly and others have noted, support for that act was driven more by cultural concerns than scientific findings. Paranoia that foreign plants and animals would subdue American species went hand in hand with paranoia among the patrician classes that foreigners and people of color would overtake the white race. Prominent voices against introduced species included a number of noted racists and xenophobes including the eugenicist A. H. Estabrook, the anti-immigration lawyer and zoologist Madison Grant, and the entrepreneur and segregationist Charles M. Goethe.[27] A few instances of introduced species that eluded human control—mainly the examples of the house sparrow and the small Indian mongoose (*Herpestes javanicus*)—were rehearsed again and again to justify this nativism, and a "law of introduced species" (as Estabrook put it) was formulated that predicted each one would "become a pest."[28]

Overlooking countless failed imports that would seem to discredit such a law, supporters of native species warned the public of the supposed danger of introducing foreign organisms: the new species invariably took over, wiping out native populations and causing untold agricultural destruction. This pattern was less a law than what Ursula K. Heise would call a "story template," a story line popular within a given interest group.[29] The story template of the introduced animal or plant upending an ecosystem remains widespread among environmentalists today, where it is used to drive home the dangers of invasive species—a common but increasingly controversial term that has been institutionalized in US law since the 1990s.[30] While introduced species do sometimes naturalize, very few imports pose a threat to native populations; a common estimate holds that only about 1 percent of introduced species cause significant problems.[31] Furthermore, predicting invasiveness based on species characteristics has proven difficult, leading some scientists to believe the success of an introduction has less to do with the species than with the invasibility of the ecosystem it enters.[32] A number of studies even indicate that successful nonnative species can add to biodiversity without driving indigenous species to extinction.[33]

27. For this intersection of racism, nativism, and conservation, see Coates, *American Perceptions*, 46–55.

28. Estabrook, "The Present Status of the English Sparrow," 134. This argument was made most comprehensively by Palmer, "The Danger of Introducing Noxious Animals and Birds," 87–110. For nativism in the government, see Pauly, *Biologists and the Promise of American Life*, 74–80.

29. Heise, *Imagining Extinction*, 7, 22.

30. The term's first codification appears to be in the National Invasive Species Act of 1996, which concerned species introduced to the Great Lakes through ballast water.

31. Williamson, *Biological Invasions*, 31–43.

32. See Davis, "Invasion Biology 1958–2005," 47; *Invasion Biology*, ch. 3.

33. See Davis, *Invasion Biology*, 115–22.

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Nevertheless the invasive species story template persists, and champions of native species continue to promote it as the authoritative explanation of an ongoing environmental catastrophe. The tale of Schieffelin's starlings occupies a privileged place in the promotion of this story template. To see how it became so central it is necessary to track the story's retellings in the century and a half since Schieffelin's act was recorded. The literary history of this anecdote provides a case study in how such stories selectively incorporate emerging concerns and empirical information over time, subordinating them to the larger framework of the invasion plot. Following the evolution of this fiction also offers a useful window onto the individuals and attitudes that have shaped American responses to invasive species, highlighting overlooked connections between cultural agendas of the past and the supposedly disinterested, data-driven policies of the present.

A Storied Bird: The Literary History of the Starling in North America

When Schieffelin died in 1906 the *New York Times* published a brief tribute.[34] It contained no mention of the American Acclimatization Society or any role in the release of the starling. A little more than a hundred years later, Schieffelin is remembered for those associations alone—and not fondly, either. On *Find a Grave*, a web directory of gravesites, users have defaced Schieffelin's page with invective. The section that is supposed to include his epitaph holds only scathing commentary: "This man brought over nuisance birds that have decimated our native American birds, since there is not a natural check and balance against them. He was a fool." In the "Flowers" section reserved for tributes, someone has left a threat instead. "Some day Im [*sic*] going to put suet feeders all around your mausoleum," the poster vows, presumably as a way to entice flocks of starlings to shit on the grave of their enabler.[35]

The ferocity of these responses shows Schieffelin's cultural significance as an emblem of humanity's disastrous impacts on the natural world. Since his death he has become the protagonist in a well-known tale of human hubris—and a convenient scapegoat for anyone feeling powerless in the face of ecological catastrophe. As his obituary indicates, however, his iconic act is mostly a later fabrication. Seeing how the story took shape highlights whose interests are served, and what kind of information is dismissed, every time the tale is trotted out as evidence of the dangers of invasive species.

Schieffelin's relation to the starling might have been forgotten were it not for the importance of the man who first reported it. Frank Michler Chapman has been called the "dean of American ornithologists."[36] He spent an illustrious career at the AMNH writing about birds for scientific and popular audiences alike. In the process he produced some of the earliest field guides to North American birds, founded *Bird-Lore* (now

34. "Eugene Schieffelin Dead."

35. "Eugene Schieffelin (1827–1906)—Find a Grave Memorial."

36. Vuilleumier, "Dean of American Ornithologists," 389–402.

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Audubon magazine), inaugurated the Christmas Bird Count, and won multiple writing prizes.[37] In the 1890s, however, Chapman was still a young assistant at the museum, where he came to know Schieffelin as the elderly gentleman who would swing by to inquire about starling sightings.[38] When Chapman set out to write his *Handbook of Birds of Eastern North America* (1895) these encounters led him to include a brief entry on the starling crediting Schieffelin with its introduction.[39]

All subsequent accounts of Schieffelin and the starlings spring from this entry. The first writer to revise and popularize the tale was Chapman himself. Chapman in fact revisited his appraisal of Schieffelin and the starling several times. His writings start off neutral, become increasingly concerned after the turn of the twentieth century, and end up ambivalent and contradictory by the 1920s. Those revaluations track closely with shifts in American attitudes toward introduced species, demonstrating how stories about the starling's release were subject to larger political and cultural forces.

While the initial *Handbook* entry makes no appraisal of the bird's value, Chapman's later writings track a broader trend of mounting anxiety about introduced species. His starling entry in *The Economic Value of Birds to the State* (1903) repeats much from his 1895 handbook but includes a new paragraph of hand-wringing over "whether this species will prove to be beneficial or injurious."[40] Chapman's concerns registered the power that the invasive story template gained in the wake of the Lacey Act. His warnings joined a chorus of others, and they did not go unheeded. Faced with complaints from farmers, city dwellers, and bird enthusiasts, the USDA launched an exhaustive multiyear study of the effects of the common starling in North America in 1915. Spearheaded by Edwin Richard Kalmbach and I. N. Gabrielson, the study surveyed farmers and compared the stomach contents of thousands of starlings against those of native species.

In a surprising turn Kalmbach and Gabrielson found that the starling was a major boon to American agriculture. Their dissections showed that the species destroyed more pests and ate fewer crops than any of its indigenous associates. Anxieties about the bird's destructiveness were mostly the result of misidentification, they argued: "As in the case of men, who are often judged by their company, the starling has been accused of deeds perpetrated largely by the species with which it associates."[41] The starling's habits—its unpredictable, irruptive migrations and its tendency to congregate in noisy groups near human habitations—also made its behaviors more salient than those of native birds. When Kalmbach and Gabrielson followed up on firsthand complaints about the birds they discovered that observers overestimated the size of starling flocks, the damage they did to crops, and probably their deleterious effects on native species—sometimes

37. Vuilleumier, "Dean of American Ornithologists"; Murphy, "Frank Michler Chapman, 1864–1945," 307–15.

38. Chapman, "The European Starling as an American Citizen," 480.

39. Chapman, *Handbook of Birds*, 259.

40. Chapman, *The Economic Value of Birds*, 41.

41. Kalmbach and Gabrielson, *Economic Value of the Starling*, 31.

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by orders of magnitude.[42] "The starling," they concluded, "possesses an almost unlimited capacity for good," and the US government should grant it widespread protection.[43]

This verdict clashed with conventional wisdom and practice when it reached the public in 1921, and naturalists like Chapman were slow to absorb it. His 1925 essay, "The European Starling as an American Citizen," falters between acceptance of the latest data and lingering suspicion. The article quotes extensively from the Kalmbach-Gabrielson study and ends with an expression of admiration for some of the species' traits. Yet Chapman could not help repeatedly and unfavorably contrasting the starling against native birds. Cavity-nesting Eastern bluebirds (*Cialis cialis*), he writes, "are no match for the relentlessly persistent alien," and he fears a future in which the starling may eventually displace "gentle-mannered hermit thrushes" in its voracious search for food.[44]

It is difficult to separate Chapman's ecological concerns from their nativist underpinnings. The article is saturated with what seems like wistful sentimentalism, an insistence that native birds possess a mystical American significance that starlings lack. "Our birds are Americans," Chapman insists: "As such they are not only the products but the expressions of their environment." While "a moving nebulous blur" of native blackbirds expresses "the Spirit of Spring," "the hurrying smudge" of starlings engenders only "disappointment or indifference." Similarly, while native birdsongs express "the dreaminess of a mid-summer day—uttered by the starling, they are a mimetic travesty."[45] The relationship of this eco-nationalism to more overtly hostile forms of xenophobia becomes clear when Chapman himself equates fear of imported plants and animals with fear of human immigrants: "Having with thoughtless hospitality accorded the starling, house sparrow, San José scale, gypsy moth, and other pests, including certain members of the genus *Homo*, free and unchallenged entry to our ports, we now ask (if to our sorrow, we have not already learned), 'Are they desirable?'"[46] The question registers the growing anti-immigrant atmosphere of the 1920s: a year earlier, Congress had passed the Immigration Act of 1924, which dramatically curbed immigration and banned Asian immigrants entirely. At the same time, Chapman recognized that his concerns marked him as a dying breed, one of "the chosen few who cherish these intimate associations with nature [and] that resent the starling's violations of them."[47] Science and popular opinion were abandoning turn-of-the-century anxieties about introduced species. Over the next decade some admirers (Rachel Carson among them) would even welcome the starling with open arms.[48]

42. Kalmbach and Gabrielson, *Economic Value of the Starling*, 12, 27, 50.

43. Kalmbach and Gabrielson, *Economic Value of the Starling*, 59.

44. Chapman, "The European Starling as an American Citizen," 483.

45. Chapman, "The European Starling as an American Citizen," 484.

46. Chapman, "The European Starling as an American Citizen," 482.

47. Chapman, "The European Starling as an American Citizen," 484.

48. See, e.g., Bready, *The European Starling*; Carson, "How about Citizenship Papers for the Starling?," 317–19.

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Nevertheless, Chapman's article did have one lasting impact on attitudes toward starlings in the United States: it was the first time Schieffelin was portrayed as a misguided enabler of environmental devastation. Previously he existed in the ornithological record as little more than a name. "The European Starling as an American Citizen" expanded him into a character, a man who "took no small amount of pride" in introducing foreign birds to the United States and frequently "came to the bird department [of the AMNH] to ask whether any had been seen recently."[49] This sketch of Schieffelin makes no mention of the broader acclimatization movement, effectively severing him from his historical context and casting him as a lone eccentric. Moreover it comprises the first time Schieffelin starred in something like a cautionary tale. "Inspired by the highest motives, he might, under proper direction, have become the father of bird conservation in America," Chapman laments. "But like many another pioneer reformer, he blazed a false trail."[50] Later naturalists sometimes echoed this image of Schieffelin as an incompetent enabler, grumbling about his "misguided good works."[51] But a cautionary tale is toothless if it contains no disastrous consequences, and the story languished for decades, a fable without a moral, until a fateful mid-century revision gave it new life.

In most senses the version of the story that nature writer Edwin Way Teale included in his essay collection *Days Without Time* (1948) parroted prior accounts. In revisiting it for his book, however, Teale included a new motivation for the bird's release. "[The starling's] coming was the result of one man's fancy," he writes of Schieffelin: "His curious hobby was the introduction into America of all the birds mentioned in the works of William Shakespeare."[52] Published more than forty years after Schieffelin's death this sentence is the first time Shakespeare enters the story. It is hard to say where Teale got the idea. The three folders of notes and source material for Teale's essay housed in his archives make no mention of Shakespeare. That claim does not emerge until the first typed draft of the chapter, alongside a speculation about why Schieffelin might have been so inspired: "About this time? [*sic*], the Shakespeare Garden was being started in Central Park, to include the plants mentioned by the Bard of Avon. This may have influenced Schieffelin in his plan."[53] The reference to the Shakespeare Garden suggests Teale may have been conflating two distinct turn-of-the-century cultural movements: acclimatization and Shakespeare commemoration. Shakespeare Clubs did sometimes establish gardens that imported plants associated with Shakespeare. One still exists on the west side of Central Park in close proximity to the first recognized starling nest. But that Shakespeare garden was not begun until 1913 and only inaugurated in 1916, a decade

49. Chapman, "The European Starling as an American Citizen," 480.

50. Chapman, "The European Starling as an American Citizen," 480.

51. Peattie, "Birds That Are New Yorkers," 249.

52. Teale, *Days without Time*, 17. The excerpt from Teale's manuscript that appeared in *Coronet* magazine in November 1947 also included this claim; see Teale, "In Defense of the Pesky Starling," 96–9.

53. Teale, "The Bird Nobody Wants."

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after Schieffelin's death; there was no relationship between the adjacent efforts.[54] The published version of Teale's starling essay eliminated both the garden reference and Teale's doubts about it, leaving only the image of an eccentric individual and "his curious hobby."

Teale's addition to the Schieffelin story lent new interest to a historical footnote otherwise earmarked for oblivion. Suddenly the success of this ubiquitous species could be understood as the upshot of one man's quirky quest—and as a testament to the power of the most famous poet in English letters. Within a few years journalists were repeating the story, with special emphasis on the link between starlings and Shakespeare.[55] But it remained little more than a bit of trivia until 1974, when a radically expanded account by Robert Cantwell appeared in *Sports Illustrated* under the title "A Plague of Starlings."

Cantwell once had dreams of being a great novelist, and his article shows he retained a knack for storytelling.[56] It seizes on Teale's Shakespeare claim and transforms Schieffelin into an unforgettable antihero, "an elegant and eccentric figure in New York high society. . . . Lean, handsome, aristocratic, with thin features, a prominent nose and a thick drooping mustache."[57] Cantwell made Schieffelin a crazed monomaniac, the Ahab of acclimatization. "He had rivals" in his efforts to introduce starlings, Cantwell claims, "but they had no profound central purpose akin to Schieffelin's plan to import all of Shakespeare's birds, and soon gave up."[58] Starlings were transformed in Cantwell's hands as well, reverting from a well-established bird and agricultural asset into a degenerate pest and enemy of the ecosystem. "It's hard to find anyone with a kind word to say for starlings," Cantwell asserts: "Francis of Assisi, if he ever tangled with them, might have been tempted to whittle himself a slingshot."[59]

The end of Cantwell's article helps furnish some of the context informing his revaluation: the rise of modern environmentalism. Following the Second World War, the widespread suburbanization of the United States led previously urban working-class and middle-class Americans to a new appreciation of their entanglement with the nonhuman world—and of their reliance on it for health and happiness. Grassroots environmental organizing by suburbanites, college students, scientists, and conservationists rose dramatically through the 1950s and '60s. It culminated in 1970 in Earth Day, a nationwide event that swept in a new era of recognizably environmentalist legislation.[60] This legislation figures in the conclusion to Cantwell's story. "An amendment to the Lacey Act now being considered sets up such strict controls that the introduction of foreign

54. On Shakespeare gardens, see Schiel, "American Shakespeare Clubs," 62–75. For the Central Park Shakespeare Garden, see "Shakespeare Garden—Central Park Conservancy"; "Central Park's Shakespeare Garden May Go," 6–7.

55. See, e.g., "Shakespeare and Starlings."

56. For Cantwell's turn away from literary fiction, see Reed, *Robert Cantwell and the Literary Left*, 142–58.

57. Cantwell, "A Plague of Starlings," 108.

58. Cantwell, "A Plague of Starlings," 109, 110.

59. Cantwell, "A Plague of Starlings," 108.

60. See Rome, *The Bulldozer in the Countryside*; *The Genius of Earth Day*; Sellers, *Crabgrass Crucible*.

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species is in effect prohibited," he explains. "There will never again be anything like the starling invasion, a very wise decision, though considerably belated. . . . Starlings have a lot to answer for."[61] Cantwell's coda underscores how his return to the starling, and to the turn-of-the-century controversies that surrounded it, comprised part of a larger cultural and legislative return to questions of nonnative species in the environmental movement. In the process of unearthing overlooked evidence of ecological degradation, then, twentieth-century environmentalists also unearthed and revived figures (like Schieffelin) and story templates (such as the dangers of foreign animal and plant invaders) whose import had long been discredited.

Accounts from the 1980s onward shift attention away from public annoyance with starlings to focus on Schieffelin, Shakespeare, and the shamefulness of introducing species beyond their native range.[62] The renewed emphasis on Schieffelin's disastrous lack of foresight is best captured in the pages of *Natural History*, the organ of the AMNH. *Natural History* celebrated its 80th anniversary in 1980 by reprinting noteworthy articles from its past, including an abridged version of Chapman's "The European Starling as an American Citizen." This edit silently omits the two pages of positive observations that concluded the original article, transforming Chapman's ambivalent essay into a prescient warning of impending environmental doom.[63]

By the 1990s Schieffelin's status as a lodestone for environmentalist loathing was secure. Even fictional figures could not help hearing Schieffelin's story and judging him for it. In T. C. Boyle's prizewinning novel *The Tortilla Curtain* (1995), the writer and environmentalist Delaney Mossbacher stumbles upon the Schieffelin story in his storehouse of nature writing: "He poked halfheartedly through his natural-history collection and discovered that the starlings he saw in the McDonald's lot were descendants of a flock released in Central Park a hundred years ago by an amateur ornithologist and Shakespeare buff who felt that all the birds mentioned in the Bard's works should roost in North America."[64] Delaney's distracted response is the expected one, as he expresses appreciation for the story and the moral that was, by the 1990s, thoroughly established: "It was rich material, fascinating in its way—how could people be so blind?"[65] The growth of new media and online social networks in the years that followed only secured the story's popular recirculation.[66]

As this literary history demonstrates, the publication, elaboration, and revival of the Schieffelin story occurred alongside a growing body of knowledge about the starling that directly contradicted it. In recent years evidence exonerating the starling has continued to pile up quietly, overshadowed by the anecdote's uninterrupted cultural dominance.

61. Cantwell, "A Plague of Starlings," 118.

62. See, e.g., Contreras, "Starlings: Birds of a Feather"; MacKay, "If Starlings Are a Problem." See also note 3.

63. Chapman, "The European Starling as an American Citizen [reprint]," 60–65.

64. Boyle, *The Tortilla Curtain*, 110.

65. Boyle, *The Tortilla Curtain*, 110.

66. See, e.g., O'Brien, "The Birds of Shakespeare"; Wright, "The Epic 1959 Battle."

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On those rare occasions when storytellers recognize a conflict between the story and the science they continue to emphasize the import of the story, underscoring its moral even if they call individual details into question.[67] This compulsion to prioritize the story and to repeat it in spite of underlying doubts suggests that it meets certain needs among scientists, environmentalists, and policy makers—needs beyond its use as a warning about invasive species. In its idiosyncratic features the tale of Schieffelin's starlings serves not only to reinforce the invasive story template but also to legitimize the authority of invasion biology itself.

The Voice of Reason: Science, Storytelling, and the Rise of Invasion Biology

Since the 1990s environmental agencies and nonprofits in the United States have presented an impressively united front against so-called invasive species. Environmental educators champion native plants and animals, in part by endorsing policies and outreach activities that seek to eradicate nonnatives. Reporters amplify this message, churning out articles about foreign species undermining biodiversity and ecosystem function. Behind the scenes, however, scientists and humanists remain unsure of both the environmental impact of introduced species and the ethics of eradication. Ecologists observe that some introductions (starlings and house sparrows among them) have experienced population declines in their native ranges, suggesting that nonnative territories might offer conservation opportunities for stabilizing global populations.[68] Critics of pronative campaigns also note the way twenty-first-century policy exhibits traces of nineteenth-century racism and xenophobia. While campaigners against invasives sometimes acknowledge the political history of their rhetoric, they draw a hard line between past prejudice and current policy. In the 1800s, they argue, suspicion of foreign species may have been rooted in xenophobia and race hatred; in its current permutation, suspicion is grounded in ecological science and sound economic data.[69] The Schieffelin story does important ideological work for this latter argument, as its plot, its characterization, and its didactic narrative voice combine to validate the ecological and economic authority of invasion biology.

The intellectual rigor of science is a central theme of the Schieffelin story, which represents a remarkable transformation of the Frankenstein myth. The Schieffelin story's plot is simple enough: like other examples of the invasive story template, it follows the

67. See Haupt, *Mozart's Starling*, 53–69; Lamb, "What If We Had All the Birds . . . ?"; Strycker, *The Thing with Feathers*, 39–43; Tenner, *Why Things Bite Back*, 148–55.

68. Laet and Summers-Smith, "The Status of the Urban House Sparrow," S275–78; Smith, Ryegård, and Svensson, "Is the Large-Scale Decline . . . ?," 741–48.

69. For overviews of this debate, see Keulartz and van der Weele, "Framing and Reframing in Invasion Biology," 93–115; Ritvo, "Invasion/Invasive," 171–74. For critiques of the rhetoric of invasiveness, see Chew and Carroll, "Opinion: The Invasive Ideology"; Davis, *Invasion Biology*, esp. 190–91; Subramaniam, "The Aliens Have Landed!," 26–40. For defenses of the rhetoric, see Coates, *American Perceptions of Immigrant and Invasive Species*, 151–89; and Simberloff, "Confronting Introduced Species," 179–92.

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contours of Mary Shelley's *Frankenstein* (1818) in tracing the disastrous effects of human hubris.[70] It departs from that gothic novel, however, by reversing Shelley's valuation of scientists and humanists.

Now the author of untold destruction to lives and livelihoods is not an ambitious scientist but an aimless, eccentric amateur. Schieffelin, a wealthy dilettante, has cultivated attachments to literature and animals that impede his understanding of the mechanics of natural systems. When his actions go wrong, they suggest a moral that is diametrically opposed to the message of Shelley's novella. Rather than censuring scientific ambition in favor of literary learning and moral feeling, the tale of Schieffelin's starlings acts as an allegory about the need for highly trained, scientific individuals to step in and regulate human engagements with nature. Only then will it be possible to ward off the tragic consequences of the artsy nature lover's well-meaning but untutored enthusiasm.

The Schieffelin story assumed its current form in the 1970s, when this messaging would have been particularly appealing to the growing number of academics and researchers who felt it was legitimate for scientists to abandon claims to disinterestedness so they could advocate for environmentalist policies. As recently as the early twentieth century ornithologists had been divided about whether it was prudent to wade into the sometimes sentimental debates surrounding avian conservation.[71] By mid-century, however, practitioners from a wide variety of scientific fields were beginning to hazard such activism. The threat of nuclear war spawned concern among scientists about the sociopolitical consequences of their research, and anxiety about nuclear fallout naturally spread to other forms of environmental degradation that threatened humans and the ecosystems on which they depended.[72] The boundaries separating academic ecology from its commercial and political applications were also eroding from the other direction, as game managers such as Aldo Leopold wrote textbooks, took academic positions, and began to understand themselves as experts responsible for the health and even the beauty of ecosystems.[73] Demand for this kind of practical, policy-oriented environmental expertise increased dramatically in the 1970s, when the rise of federal environmental legislation and the creation of the Environmental Protection Agency shifted the movement's center of gravity away from regional grassroots organizers and toward trained scientists and experienced bureaucrats.[74]

The new science of invasion biology occupied the center of this emerging intellectual territory, right at the troubled nexus of science, application, and activism. Invasion biologists sought unprecedented academic authority for professionals concerned with noxious species—a concern traditionally relegated to the applied, consumer-oriented fields of game management, agronomy, and pest control. When invasion biologists

70. See Tenner, *Why Things Bite Back*, esp. chs. 6–7.

71. Barrow, *A Passion for Birds*, chs. 5–6.

72. Fleming, "Roots of the New Conservation Movement," 7–91; Rome, *The Genius of Earth Day*, 20–29.

73. Flader, *Thinking Like a Mountain*, ch. 4; Dunlap, *Saving America's Wildlife*, 65–110.

74. Sellers, *Crabgrass Crucible*, 266–96; "Three Eras of Environmental Concern," 365–67; Rome, *The Genius of Earth Day*, 273–80; and Worster, *Nature's Economy*, 355–87.

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promised to investigate how biological dynamics were altered by introduced species they sounded like disinterested scientists. But the field's preoccupation with environmental and economic consequences signaled its affiliations with the messier, more public realms of politics and commerce—realms that risked tainting science with the advocacy of special interests.[75]

The Schieffelin story directs attention away from these associations by reimagining the relationships between science, commerce, advocacy, and expertise. It acknowledges the dangers of unprofessionalism and self-interested meddling in ecosystems. It does not attribute such meddling to political or economic interests, however. Instead it associates these dangers with a clueless littérateur from the last century. It contrasts his disastrous dabbling with sound modern knowledge of ecology and economics, two fields whose findings the story treats as disinterested and mutually reinforcing—the province of the disembodied, omniscient narrator rather than the flawed protagonist. Indeed, the Schieffelin story typically ends with the narrator's imposition of twin morals, one about the starling's decimation of native birds and the other about its $800 million worth of annual damage to American crops. The Schieffelin story thus serves a number of interests, in part by welding them together. It offers the last word to invasion biology as a necessary and apolitical form of expertise specializing in dangers to the economy and the ecosystem. Given that much of the post-1970 backlash against environmentalism casts environmental safeguards as threats to the economy, the neat dovetailing of economics and ecology advanced in the Schieffelin story adds to its appeal.[76] In the case of invasive species like the starling, at least, it would seem economists and environmentalists can unite against a common enemy.

There is a grain of truth to this: ecological and economic data on starling impacts in the United States do corroborate each other. What they suggest, however, is that starlings are probably not the monsters they are made out to be. Historical data gathered from bird counts and breeding surveys before and after starling settlement indicate that "European Starlings have yet to unambiguously and significantly threaten any species of North American cavity nesting bird."[77] The commonly cited claim that starlings inflict $800 million in agricultural damage annually is adapted from a single British study from 1980—one that finally faults bad harvesting practices, not starlings.[78] Efforts to associate starlings with disease in livestock have also failed to find a convincing link.[79]

75. See Davis, "Invasion Biology 1958–2005," 35–64; Crowcroft, *Elton's Ecologists*, 42. On conservation biology more broadly, see Meine, *Correction Lines*, ch. 3.

76. On this economic backlash, see Rothman, *Saving the Planet*, ch. 7.

77. Koenig, "European Starlings," 1139.

78. See Feare, "The Economics of Starling Damage," 41–44; adapted by Pimental et al., "Environmental and Economic Costs," 59; then repeated by Linz et al., "European Starlings," 380. Other estimates rely on subjective impressions of damage and the species responsible for it. See Homan et al., *European Starlings*; and Anderson et al., "Bird Damage," 103–9.

79. Carlson et al., "The Role of European Starlings," 340–43; Carlson et al., "Efficacy of European Starling Control."

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This research on the relationship between starlings and livestock points to one sector of agriculture where the birds are undeniable pests: the cattle feedlots of concentrated animal feeding operations (CAFOs). Starlings arrived in America long before such feedlots were developed. The species had been reported throughout the continental United States by the 1960s, when large-animal factory farming was still in its infancy. At that time agribusiness corporations began to consolidate individual farm holdings into CAFOs—warehouses and outdoor lots where animals are confined to small spaces and provided with manufactured feed pellets and pharmaceuticals to maximize profits.[80] As these methods spread, the USDA partnered with Purina Mills—a manufacturer of the feed pellets starlings were stealing—to develop DRC-1339, a powerful, slow-acting poison trademarked as Starlicide.[81] Starlicide soon became instrumental to the federal bird control program nicknamed "Bye Bye Blackbird," inaugurating a pattern of government-sponsored avicide that continues to the present. In 2009 alone the USDA estimated the program killed some 4 million blackbirds. Environmentalists and ornithologists have raised concerns that these programs may underreport avian deaths and could be hastening nationwide declines in avian populations.[82]

There is nothing particularly innocent in the rise of CAFOs, just as there is nothing particularly noxious about the starling itself. There may be something noxious, however, in the way the Schieffelin story works to align the interests of agribusiness with environmentalism. When popular versions of the Schieffelin story end by coupling the starling's agricultural and ecological damages, they imply the two concerns form a natural alliance. In reality CAFOs and other forms of intensive agriculture constitute significant threats to the environment in their own right. They hasten climate change, exhaust resources, and pollute water supplies at a grand scale.[83]

The Schieffelin story leaves no room for such socioeconomic complexity. It deploys melodramatic stock characters—the aggressive assailant, the innocent natives, the bumbling enabler—to drive home a popular tenet of environmentalism. It pits supposedly quantifiable, clearly defined economic and ecological facts against the messier emotional distractions of humanistic learning. With the neat division it establishes between its ignorant amateur protagonist and its scientifically savvy narrator, the Schieffelin story provides reassurance that these distinctions are evident and easily enforced. Yet the literary history of Schieffelin's starlings belies such boundary lines, demonstrating how easy it is for stories to sneak past pat disciplinary divides. The tale has persisted

80. For the rise of cattle feedlots, see MacDonald and McBride, *The Transformation of U.S. Livestock Agriculture*, 11–13; Mason and Singer, *Animal Factories*, 13–14.

81. For Starlicide's history, effects, and present uses, see Stickley, "Extended Use of Starlicide," 79; DRC-1339 (Starlicide); Homan et al., "European Starlings," 12–14.

82. Johnson, "Bye Bye Blackbird."

83. See Mason and Singer, *Animal Factories*, 107–32; Gurian-Sherman, *CAFOs Uncovered*, 41–60; and *Livestock's Long Shadow*.

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and expanded to the point where it now informs science education and environmental policy—despite the fact that the best information available has undercut both the story and its moral for the last century.

This victory of fiction over fact provides a stark reminder that scientific results are unlikely to alter policies or change behavior until they meet with a cultural context capable of making sense of them. The invasive species story template and its popular rehearsal in the Schieffelin story work against such sense-making. They act as drags on environmental education and policy, anchoring both to a nativist past while obscuring a problematic rise in traffic between business, bureaucracy, and scientific research. Counterintuitively the first step toward discarding these unhelpful fictions may entail taking them more seriously. Studying where such anecdotal evidence comes from, when it is told, and what it insinuates makes it easier for us to put critical distance between ourselves and the stories we tell, enabling us to make more deliberate choices about how to translate scientific data into meaningful environmental action.

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