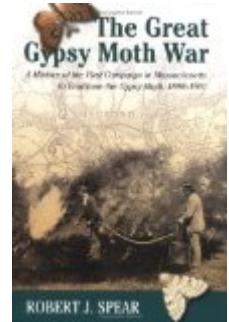


Robert J. Spear. *The Great Gypsy Moth War: The History of the First Campaign in Massachusetts to Eradicate the Gypsy Moth, 1890-1901.* Amherst: University of Massachusetts Press, 2005. xv + 308 pp. \$34.95, cloth, ISBN 978-1-55849-479-4.



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In the late 1880s, Gypsy moth caterpillars overran Medford, Massachusetts. They devoured tree foliage--so completely in places it looked as though there had been a fire--and then moved to the next yard, the next house, the next street. They lay so thick on the ground that the roads looked like carpet. Their tracks could be seen in the dirt, their munching heard through the night. Railroad tracks were stained green from their squished bodies. Rainspouts overflowed with their excrement. Walkers used parasols on sunny days to keep the caterpillars from falling on them. The worms slipped into houses, through doors, open windows, chimneys, eating potted plants, hiding under pillows and under blankets. Residents swept them into gutters, fed them to their hens, buried them, scalded them with burning water, collected them in buckets, soaked them with kerosene and set them aflame. One resident went through five gallons of fuel in three days. Another, boasting, said he destroyed two tons of the bugs. Curiosity seekers came to see the hardest hit areas. The caterpillars clung to them, clung to commuters, clung to trains, and dropped into horse-drawn carriages as they passed through

town, spreading through the state. In 1890, legislators visited Medford; what they saw convinced them that something needed to be done. That March, they established a commission to fight the moth, funded it with \$25,000, and gave its agents the authority to enter any property, without permission or warrant, to exterminate the insect. It was the start of a long war, one that would last well into the twentieth century.

Robert J. Spear's *The Great Gypsy Moth War* examines--as the subtitle indicates--the first battle against the Gypsy moth, Massachusetts's campaign to eradicate the insect in the 1890s. Spear is a violin-maker by trade whose interest in the Gypsy moth was piqued by spraying for the insect near his home in 1994 (p. xii). He started researching the Gypsy moth, its biology, and the history of attempts to control it. Clearly, Spear had a lot of fun with the topic, and did yeoman's work surveying the historical record: he cites state reports, personal correspondence, legislative transcripts, census records, and newspapers. His digging produced a number of fascinating nuggets that will be of interest to environmental histori-

ans and historians of science who study insect control, including the gothic descriptions of caterpillar over-population noted above, and textured accounts of the daily work performed by the men employed to control the moth--the foot soldiers in the war, as it were--redressing a common failing in most histories of insect control, which do not dwell much on the people applying the poisons or scouting the bugs. Unfortunately, though, Spear does not pull the information that he has recovered into a coherent and convincing argument.

Spear begins the story in the 1850s, when the French illustrator Etienne Leopold Trouvelot arrived in Medford, Massachusetts. Trouvelot was a man of many interests, and Spear has an obvious affection for him. In addition to his illustrating, Trouvelot was an amateur astronomer (establishing connections with Harvard's observatory), and an amateur entomologist. Between 1859 and 1870, at least, he studied silviculture, hoping to find a better silkworm, or breed one from allied species. It was in the course of these breeding experiments that Trouvelot imported the Gypsy moth from Europe. The insect was a poor silk producer, but a hardy bug--as it proved subsequently--and Trouvelot apparently hoped that it could parent a robust hybrid. Despite the warnings from other entomologists that the insect should be carefully monitored--preferably destroyed--because of the problems it caused in Europe and fear of similar problems in the woods of Massachusetts, Trouvelot let the Gypsy moth escape and, it seems, left the shed where he bred them infested when he moved to Cambridge in 1872 (p. 60). Less than a decade later, the moth's population irrupted.

After two chapters on Trouvelot, Spear gets to the heart of the book: the campaign to eradicate the moth. Spear suggests, without ever offering a sustained argument to convince, that the moth was never enough of a pest to justify the extreme measures taken to exterminate it. So why eradicate? Because the state listened to scientists who put the concerns of their discipline above the pub-

lic good, Spear claims. Economic entomology--the science of killing bugs--was starting to professionalize in the second-half of the nineteenth century, its practitioners differentiating themselves from other kinds of entomologists. The moth problem could have been addressed by non-economic entomologists at Harvard, Spear argues, but instead was managed by Charles Fernald, at Massachusetts's agricultural experiment station in Amherst. (Fernald represents an economic entomologist *par excellence* for Spear.) This was the "crucial decision," Spear claims, "that irreversibly altered the course of subsequent events" (p. 36). (In an epilogue, Spear argues that the Gypsy moth campaign of the 1890s set the terms of debate for all future attempts to control the insect.) Fernald saw insects only as beneficial or harmful, Spear says, and the Gypsy moth was certainly harmful. When the state created its first commission, Fernald was, by his own account, "astonished" that it was staffed by laymen, one a friend of the governor (p. 52). Through what Spear considers either a conspiracy or overweening zeal, the economic entomologists wrested control away from this committee, the better to prove the worth of their science. In the process, Fernald gained "unprecedented power" to prosecute the extermination of the invader (p. 4). Most of the book is devoted to the political machinations that the entomologists used to maintain this power, leading Spear to worry over the ceding of policy to experts (p. 3).

On the face of it, the argument seems compelling. Fernald found that, fed on the insecticides that were supposed to kill them, the caterpillars "grow fat," yet he continued to support the spraying of Paris green (p. 149). And Leland Howard, who became the head of the U.S. Department of Agriculture's entomological programs in 1894, seemed content to offer whatever opinion was necessary to keep the program rolling, even as evidence that eradication was not working became overwhelming (p. 170). But other facts undermine Spear's argument. Chief among them, Fernald continually tried to *resign* from the commission

heading the eradication campaign. Indeed, Spear concedes that, although Fernald had gained power, he used it sparingly, becoming "almost superfluous to the project" (p. 210).

Fernald's actions are hardly those of a conspirator or a zealot. Spear misjudges him and, I think, misunderstands the structure of nineteenth-century entomology, which leads him to place too much importance on the distinction between economic entomology and other kinds of entomology. Charles Rosenberg has shown how agricultural scientists, at this time, used promises of their science's practicality to win government support, while also using the resources they garnered to conduct basic research.[1] Entomologists were doing the same thing, promising services (which they genuinely felt responsible to provide, as did the agricultural chemists Rosenberg studied), while also conducting more theoretically inclined research. (It was not until the 1920s, when chemical manufacturers became heavily involved in the production of pesticides, that a real rift developed between economic entomology and academic entomology.) In fact, it is very difficult to draw the line between practical and basic entomological research in the nineteenth century. As Spear notes, but does not follow up on, economic entomologists needed to know the life history, habits, and bionomics of insects in order to know when was the best time to spray, and so one entomologist labeled economic entomology a subdivision of ecology (p. 42). Fernald said, "I am a systematic entomologist and also an economic entomologist" (p. 237). He wanted to put aside Gypsy moth work so that he could return to his monograph on the grass moths of North America, a primarily taxonomic study (p. 46). And he wanted to leave the agricultural station at Amherst for Harvard (p. 133). Meanwhile, Harvard entomologists were deeply involved in the Gypsy moth campaign: Nathan Shaler, a Harvard professor (although not formally trained as an entomologist), was the one who led the drive to replace the first commission with one staffed by economic ento-

mologists; and he was a proponent of eradication. This is not to say that there were no zealous advocates of economic entomology, only that these were the exceptions, and so Spear's analytical framework can only explain the exceptions, not the motivations of the main participants.

To Spear's credit, his book is comprehensive enough to suggest an alternative reason for the state's embrace of eradication. Shaler testified before the Massachusetts General Court that he believed that American civilization was at risk of being destroyed by the moth--because forests were the cradle of civilization, and the moth threatened these. The argument rings of nativist concerns of the time about the simultaneous decline of the white race and of nature's grandeur. That the nation was under attack by the *Gypsy* moth would have only deepened the sense that these problems were intertwined. There is not enough evidence in the book to suggest whether nativist concerns drove the extermination campaign, but, if so, it would not be without precedent. Anxieties over sparrows at the time were commonly linked to more general concerns about immigrants, for example.[2] Could these worries have swayed the state? I do not think that the entire episode can be reduced to nativist worries, but suspect that it was a factor.

The Great Gypsy Moth War seems pitched at a general audience--certainly it is too detailed and narrowly focused for undergraduates, yet too analytically unsophisticated for graduates--and Spear structures his narrative around an issue of general interest: what role should experts play? How much power should they have? Experts offer so much, promise the end to problems--but the power they gain, especially when backed by the government, seems anti-democratic, opposed to the American ideal of individual liberty. It is an important topic, and Spear is right to see the American ambivalence over expertise in the war on the Gypsy moth. But concern over expertise is not what made the Gypsy moth eradication cam-

campaign of the 1890s distinctive. Similar concerns animated discussion over grasshopper control on the Western range in the 1870s (an episode that Spear mostly ignores) and animated discussion over insect control operations into the twentieth century.[3] In different eras, though, the terms of the debate change, the power of experts waxes and wanes, the cultural anxieties vary: debates over grasshopper control had religious undertones, some later debates touched on fears of communism. What made Massachusetts's campaign different from others was the structure of entomology at the time--not amateur, not yet divided--and the cultural concerns of the 1890s--*inter alia*, nativism and conservation. These do not get the attention that they deserve and, in the end, Spear tries too hard to fit the rich and complicated details he has found into a framework that is too rigid. The mystery of why Massachusetts chose to eradicate the Gypsy moth remains unsolved.

Notes

[1]. Charles E. Rosenberg, *No Other Gods: On Science and American Social Thought* (Baltimore: Johns Hopkins University Press, 1976; 1997, chapter 12).

[2]. Gary Alan Fine and Lazaros Christoforides, "Dirty Birds, Filthy Immigrants, and the English Sparrow War: Metaphorical Linkage in Constructing Social Problems," *Symbolic Interaction* 14 (1991): pp. 375-393.

[3]. Annette Atkins, *Harvest of Grief: Grasshopper Plagues and Public Assistance in Minnesota, 1873-1878* (St. Paul, MN: Minnesota Historical Society Press, 1984); and Joshua Buhs, *The Fire Ant Wars: Nature, Science, and Public Policy in Twentieth-Century America* (Chicago: University of Chicago Press, 2004).

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