

**THE MASSACHUSETTS DIVISION OF  
FISHERIES AND WILDLIFE:  
1866-2012**



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**Front Cover:**

Clockwise: Salmon taken at Deer Island in the Merrimack River, 27 March 1937,  
by Mr. Scott, drawbridge tender. Photo © *MassWildlife* • Lori Erb, radiotelemetry, Blanding's  
Turtle Photo © Bill Byrne • Burrage Pond Photo © Bill Byrne  
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**Back Cover:**

Clockwise: Ruffed Grouse Display © by Tom O'Shea  
• Coastal Swamp *Metarranthis pilosaria* Moth © by Mike Nelson  
• Muddy Brook WMA, © Bill Byrne • Plymouth Gentian Flowers, © by Jennifer Garrett



# TABLE OF CONTENTS

INTRODUCTION .....	5
THE GOODLIEST CONTINENT THAT WE EVER SAW: THE 1600s .....	6
THEY DESTROY ALL THAT COMES IN THEIR WAY: THE 1700s.....	11
NON NOBIS SOLUM: 1800-1865 .....	15
THE BOARD OF COMMISSIONERS YEARS, 1866-1919: A SUMMARY.....	20
Obstructions to the Passage of Fish: 1866-1869 .....	22
Successful Cultivation of Fish is No Longer a Matter of Doubt: the 1870s .....	24
The Protection and Preservation of Birds and Mammals in Like Manner as to Fish: the 1880s .....	29
Wilkinsonville Trout and Mongolian Pheasants: the 1890s .....	33
Artificial Propagation and Protection of Native Varieties is More Essential Than Introduction of New Varieties: the 1900s .....	39
Conservation Has Captured the Nation—It is a Moral Issue: the 1910s .....	49
THE DIVISION OF FISHERIES AND GAME, THE EARLY YEARS, 1920-1947: A SUMMARY.....	58
The Stock Must Have Places to Breed and to Feed: the 1920s .....	60
The Economy Collapses, a Profession Arises: the 1930s.....	72

The War Years and the Aftermath: 1940-1947 .....	87
THE DIVISION OF FISHERIES AND GAME, THE LATER YEARS, 1948-1969: A SUMMARY.....	95
Conservation is the Science of Man’s Successful Living in Relation to Nature and Her Resources: 1948-1959 .....	99
The Control of Nature is a Phrase Conceived in Arrogance: the 1960s .....	120
THE DIVISION OF FISHERIES AND WILDLIFE, 1970-2012: A SUMMARY.....	138
A National Teach-In on the Crisis of the Environment: the 1970s .....	142
The Division [has] a Clear Mandate to Operate a Nongame Program: the 1980s .....	167
Lessons Aply Formulated & Implemented as a Conservation Doctrine: the 1990s .....	189
The Intrinsic Value of Biological Diversity and [its] Importance for Evolution and for Maintaining Life Sustaining Systems of the Biosphere: the 2000s.....	209
IN SUMMARY: THE ESSENCE OF WILDLIFE MANAGEMENT .....	231
ACKNOWLEDGMENTS .....	236
TABLES.....	237
REFERENCES AND CHAPTER NOTES .....	248

# THE MASSACHUSETTS DIVISION OF FISHERIES AND WILDLIFE: 1866-2012

## INTRODUCTION

“It is therefore necessary that memorable things should be committed to writing, (the witness of times, the light and the life of truth,) and not wholly betaken to slippery memory, which seldom yieldeth a certain reckoning”— Sir Edward Coke (1660)<sup>1</sup>

The Commonwealth<sup>2</sup> of Massachusetts<sup>3</sup> had a population<sup>4</sup> of 6,547,629 in 2010, the third highest in density (839.4 people per mi<sup>2</sup>) among the 50 states. It is 44th in size (8092 mi<sup>2</sup>)<sup>5</sup> among the states and is comprised of 14 counties<sup>6</sup> and 351 incorporated cities and towns, with no unincorporated areas. It was the second state to be settled by Europeans and the ninth to ratify the U.S. Constitution.

This is a history of one Massachusetts governmental agency<sup>7</sup>—the Division<sup>8</sup> of Fisheries and Wildlife (hereafter “DFW” or “Division”)—from its beginning as a Fisheries Commission in 1866 to 2012. Although the focus is on the structure, programs, and accomplishments of DFW, those cannot be segregated from the social history of the state nor from the resultant environmental changes. Human actions have altered the planet<sup>9,10,11,12</sup> since the era when Neolithic hunter-gatherers first congregated in permanent agricultural settlements<sup>13</sup>. Consequent to these perturbations, the natural environment of Massachusetts in 2012 only weakly resembles that of 1600<sup>14,15,16,17</sup>. Accordingly, historical events and coincident actions, perspectives, laws, attitudes and thought processes are set forth as necessary to facilitate our understanding of the eventual inception and evolution of the Commonwealth’s fish and wildlife management agency. Direct quotations are frequently used to tell the story in a participant’s or observer’s own words.

The Division of Fisheries and Wildlife is charged in statute<sup>18</sup> to conserve, maintain, and protect the natural and aesthetic qualities of the environment for the benefit and enjoyment of the people. In essence, the Division is responsible for managing the abundance and diversity of the state’s wild animals, plants, and habitats. The agency’s management philosophy is thereby based on an understanding that the health and well-being of living things is inseparable from the condition of the abiotic elements of the environment, that the condition of wildlife and wild plants are indicators of environmental quality, and that appropriately managed wild plants and animals are a source of appreciation and recreation<sup>19</sup>.

This book is necessarily reductionist. It is impractical to include everything that occurred during the 147 years since the creation of the Fisheries Commission. Those readers interested in trends or details of a particular management practice, installation history, personnel change, species history, statutory or regulatory change, stocking record, harvest tally, or thought process are referred to the Annual Reports of the Division of Fisheries & Wildlife (and its predecessors), the minutes of the Fisheries & Wildlife Board, the annual “Abstracts” of the fisheries and wildlife laws, the annual progress reports or final reports of the Division’s several Federal Aid or contracted projects, and other DFW documents or records. Readers should also note that harvest and stocking tallies included herein may be rounded and that sex, age, and season classes may be

grouped. In some instances, tallies may have been omitted from the available records for a particular year or span of years. Animals or eggs distributed to cooperators as breeding stock may also not be included in all tallies. Readers are further referred to the chapter notes for references and additional commentary.

Readers may approach this book from several perspectives, depending on their level of interest. Those desiring a simple overview may find it convenient to read only the Introduction, the four quarterly summaries, and the concluding Summary. Alternatively, the addition of the three chapters covering 1600-1865 will elucidate the environmental, social and political ramifications which ultimately led to the formation of a formal fish and wildlife agency. Finally, the reader may then select as many of the 15 subsequent decades (and individual years) as desired in order to understand changes in fish and wildlife populations, management actions and public attitudes over time.

## THE GOODLIEST CONTINENT THAT WE EVER SAW: THE 1600s.

“For that part of the Countrey wherein moſt of the *English* have their habitations: it is for certaine the beſt ground and ſweeteſt Climate in all thoſe parts, bearing the name of *New England*”—William Wood (1634)<sup>1</sup>

Prior to European settlement, Massachusetts was populated by several clusters of Algonquian tribes and bands, from the Pocumtuck and Nipmuc in the west and central to the Massachusett and Pokanoket (Wampanoag) in the north and east<sup>2</sup>. Cautious and apprehensive but desirous of trade, the tribes were soon overwhelmed and decimated by introduced infectious disease<sup>3,4</sup> and by wars with the Europeans and with other tribes<sup>5,6,7</sup>.

European fishermen and traders had been visiting the New England coast and interacting with these native tribesmen since at least 1524<sup>8,9</sup>. However, none of these visitors attempted to settle—even briefly—until Bartholomew Gosnold (1572-1607) established a trading camp on Cuttyhunk Island in Buzzard’s Bay, Massachusetts in 1602. Gosnold (who named Cape Cod for its “great store” of codfish) remained about one month<sup>10,11</sup> exploring the area, trading with the Indians, and collecting sassafras<sup>12</sup>. His list of “commodities such as we saw”<sup>13</sup> is the first recorded compilation of the fauna and flora of Massachusetts.

Subsequently, Martin Pring<sup>14</sup> (1580-1626) in 1603, Samuel de Champlain<sup>15</sup> (1574-1635) in 1605, and John Smith<sup>16</sup> (c. 1580-1631) in 1614 visited the Massachusetts coast but their observations of wildlife were limited. The “Pilgrims” (English religious dissenters exiled at Leyden in Holland) were subsequently sponsored by English investors and sailed westward in the *Mayflower*, anchoring in Provincetown Harbor on November 11<sup>17</sup>, 1620<sup>18,19</sup>, shifting to Plymouth Harbor on the mainland on December 16<sup>17</sup>. While in Provincetown, most adult males signed the “Mayflower Compact”, governing the activities of the Colony. Then, in 1623, certain colonial laws were formally enacted, including the provision “That ffowling fishing, and Hunting be free to all the inhabitants of this gouernment”<sup>20</sup>. This was a deviation from English common law, which held that while free-ranging wild animals belonged to no one, the landowner had

near-exclusive rights to hunting and angling for them<sup>21,22,23</sup>. The abundance of wild-life in the Colony, and the small number of gentry, was deemed to warrant free access to the harvest for the eventual benefit of all.

The first two years were lean ones in Plymouth, with half the colonists dying the first winter but more ships and settlers slowly arrived. By 1630, there were ≈300 people, ≈2000 by 1643, and ≈7000 by 1690<sup>24</sup>. At its peak, Plymouth Colony occupied most of present-day southeastern Massachusetts.

In the fall of 1623, the Dorchester Adventurers established a short-lived settlement at Cape Ann, and in 1625 the trader and liberal Thomas Morton (c. 1579-1647) began his controversial “Merrymount” social experiment at Quincy. In 1629, the 6-ship Higginson fleet arrived at Salem. Then, in April 1630<sup>25,26</sup>, John Winthrop (1587-1649), carrying a Patent from the Council for New England, led an 11-ship convoy to Massachusetts, settling initially at Charlestown. In 1630, 17 ships totaling 1500 passengers arrived at Massachusetts Bay and Plymouth<sup>26,27</sup>. Over the next 12 years, nearly 200 ships (“The Great Migration”) brought emigrants to New England<sup>28</sup>. Colonists soon moved well inward from the coast, with the business-minded William Pynchon (1590-1662)—who came with Winthrop in 1630—founding Springfield on the Connecticut River in 1635<sup>28</sup>.

These settled New Englanders—people of their times—nonetheless considered themselves to be British, faithful Christians (despite divisive doctrinal questions), and loyal subjects of a monarchical government, and were keenly conscious of their respective positions within the hierarchical class structure of British society. The Puritans, in particular, were deeply religious, socially cohesive, and politically adept but conservative. Yet, these seemingly intolerant gentry started a process which evolved into a democratic commonwealth and influenced how colonial government exploited and managed environmental resources. Winthrop’s famous sermon<sup>29</sup> on board the *Arabella* in 1630 sounded an ethic of social collectivism: “...wee must uphold a familiar Commerce together...our Community as members of the same body...that wee shall be as a Citty upon a Hill...”<sup>30</sup>. He also once remarked that “...democracy is...the meanest and worst of all forms of government...”<sup>31</sup>. Yet, in the context of the times, equality was only an equality among the social elite. Winthrop accepted these social differences but argued forcefully to define and defend true liberty<sup>32</sup>. As a Commonwealth builder<sup>33</sup>, yet true to his heritage and his class, Winthrop set in motion a process which provided welfare, power, innovation, and perpetuity for the governance of Massachusetts.

The Rev. Francis Higginson (1587-1630), arriving in Salem Harbor in June 1629 with a 6-ship convoy, had laid the path for the Winthrop colonists who soon followed. Higginson’s letter of September 1629<sup>34</sup> was a masterpiece of promotional literature<sup>35</sup>, enthusiastically (and optimistically) lauding the “commodities” of the area, citing “...wood, no better in the world..”, “...such abundance of mackerels that it would astonish one to behold...”, and a country that “...doth abound with wild geese, wild ducks, and other sea fowl”.

“Commodities” were important, not only the physical features such as land and water (to encourage farming) but tangible resources including minerals, timber, fish, and peltries, to be harvested for the financial benefit of colonists and their backers. Books by William Wood<sup>1</sup> (fl. 1629-1635), Thomas Morton<sup>36</sup>, and John Josselyn<sup>37,38</sup> (fl. 1638-1675) were promotional, often self-justificatory, and sometimes incredible or inaccurate. They provide a unique vision of the landscape, plants, animals, and Indian life of the times. However, in keeping with their interests, the writers focused on the valuable—“...Deare, of which there are greate plenty, and those are very usefull...”<sup>39</sup>,



Photo © Steven Hurley

Figure 1. Modern reproduction of Aptucxet Trading Post (built on original foundation), Bourne, 2012.

“Otters, whose furre is much used for Muffes...”<sup>40</sup>; the inimical—“...Wolfs...do much harm by destroying of our English Cattle...”<sup>41</sup>, “...a small Squerrell...which doth much trouble the planters of Corne...”<sup>42</sup>; and the amazing—“ ...a Sea-Serpent or Snake... upon a Rock at Cape-Ann...”<sup>43</sup>.

Although European fishermen had been exploiting the Grand Banks since the 1500s<sup>44</sup>, the once-secondary fur trade surpassed fish as a commercial resource<sup>45</sup> after 1610 when Champlain was granted a monopoly by the French government. The fur trade was the first major land-based primary resource-based industry<sup>45</sup> in the New World. The most valued furbearer was the beaver<sup>45,46</sup>, highly coveted in Europe for making felt hats.

John Smith<sup>16</sup> “...got for trifles...” nearly 1100 beaver, 100 martens, and nearly 100 otter pelts trading briefly along the coast near Monhegan Island, Maine<sup>47</sup> in 1614. The Plymouth colonists were trading with the Wampanoag as early as 1621, sending the newly arrived *Fortune* back to England with “...2 hoggsheads of beaver and otter skins...” worth about £500<sup>48</sup>. William Bradford<sup>18,49</sup> (1590-1657) considered the fur trade essential to the survival of the Plymouth colony. Those colonists also entered into a relationship with the Dutch, and in 1626, Isaak De Rasieres<sup>50</sup> visited Plymouth, selling them £50 of wampum<sup>51</sup>, and entering an informal agreement as to their respective trade boundaries. In 1627<sup>18</sup>, Plymouth established a trucking house<sup>18,52</sup> at Aptucxet (Figure 1) in present-day Bourne and did a thriving business there for many



Photo © Bill Byrne

Figure 2. Beaver with branch, Lenox.

years. However, Maine<sup>46</sup> was the greatest source of beaver for the Pilgrims<sup>49</sup>, with principal trucking houses on the Kennebec and Penobscot rivers. Their fur trade grew rapidly after about 1628, and between 1631-1636 the Pilgrims sent to England 12,000 lb. of beaver and 1000 of otter<sup>49</sup>. The sales of the beaver came to £10,000 profit with the otter receipts paying the cost of transport<sup>18</sup>. However, by about 1640 the trade was falling off, due to conflicts with the French, the Massachusetts Bay Colony, and other European colonies. The days of coastal fur-trading were passing<sup>49</sup> but they had enabled Plymouth to pay off its debts, buy essential supplies, and prepare for the next economic endeavor.

In March 1631<sup>53</sup>, export of beaver (Figure 2) from the Province of Massachusetts Bay was prohibited without the permission of the colonial governor. Then, in June 1632<sup>54</sup>, the Province established a 12 d. tax (repealed in 1634<sup>55</sup>) on beaver purchased from the Indians and set up a trucking house in each plantation (i.e., settlement). By 1657, the general court of Massachusetts [Bay] decided to further control the fur trade<sup>56</sup> and the fur trade on the Connecticut River was formalized, with John Pynchon paying £20 for an exclusive license<sup>49</sup>. His account books for 1652-57 showed 8992 beaver skins valued at £5220, 320 otter, and 161 other pelts<sup>57</sup>. Then, between 1658-74, Pynchon shipped 6480 beaver, 718 muskrat, 415 moose, 379 otter, 315 fox and raccoon, and 228 others<sup>57</sup>. Massachusetts traders had also pushed northward into Maine—coming into conflict with the French—and into New Hampshire along the Merrimack River<sup>49,56</sup>. The volume of the Merrimack trade was second only to that on the Connecticut<sup>49</sup>, leading to the settlement of several Middlesex County towns. In 1657, when harvests were declining, the volume of trade from those areas was about 2000 lbs. of beaver annually<sup>49</sup>. By the time of King Phillip's War, the fur trade had largely faded away, although some activity took place on the Connecticut River until about 1750. Much later, a provincial law of February 1764<sup>58</sup> prohibited persons other than Indians from hunting beaver and other furbearers in areas to the north and east of the Saco [now in Maine] truck house except where they dwelled.

Wolves were "...the greatest inconveniency the Countrey hath..."<sup>59</sup> and in November 1630<sup>60</sup>, a bounty on them was established by the Massachusetts Bay Colony. Counties and towns often set their own bounties, in addition to those of the colony or province. Hampshire County paid bounties on 305 adult wolves and 34 whelps in 1698<sup>61</sup> and when the county reward was 20 s. it required much of the county tax to pay for it<sup>62</sup>. In some locales, wolf bounties continued well into the 19th century. Bounties were also a common means of targeting other allegedly noxious animals, including bears, wildcats, squirrels, woodchucks, crows, woodpeckers, and rattlesnakes.

White-tailed deer were valued both for meat and for hides<sup>62,63</sup>. English merchants had a strong demand for leather goods and deer hides were an article of commerce rivaling that of beaver<sup>64</sup>. Hides and venison were also used domestically. Deer meat sold for 2-2½ d. per pound in the Connecticut Valley c. 1662<sup>62</sup> and dressed hides were used for breeches, jackets, and gloves. Concerned by the exploitation of deer, Massachusetts enacted a law in March 1693<sup>65</sup> (amended in December 1698<sup>66</sup>) implementing a closed season on deer from January through June (later July). Enforcement agents ("deer Reeves"<sup>66,67</sup>) were also frequently appointed. While in some towns these officials were appointed as late as the 1790s, laws were feebly enforced and deer were constantly hunted. The animal nonetheless remained reasonably common in parts of the state well into the 19th century.

European fishermen had been exploiting the vast fishing grounds of North America since the 1500s<sup>44</sup>. Mackerel, cod, halibut, haddock and others were found in illim-

itable numbers along the coast<sup>15,68</sup> and the anadromous salmon, shad, sturgeon, and river herring abounded in the larger coastal rivers<sup>69,70</sup>. Both Massachusetts colonies were initially attracted to fishing as an economic venture. William Wood<sup>71</sup> noted that the chief trade fish was cod but that much sturgeon<sup>72</sup> was taken, pickled, and brought to England. The Plymouth colonists loaded two vessels with salted codfish in 1625<sup>73</sup> and set them to sail for England. However, both ventures failed and William Bradford believed (in 1629) that the colonists had always lost [money] by fishing<sup>74</sup>. Instead, a licensing system for non-residents (i.e., Massachusetts Bay) was in effect from 1646-1650<sup>75</sup>. The office of “water bailiff” was created in 1670<sup>76,77</sup> to collect fines from trash dumpers and taxes on harvested fish. Restrictions were also imposed on fishing, especially for mackerel<sup>78</sup>.

The first shore-based fishing station in northeastern Massachusetts was established at Marblehead in 1631<sup>79</sup>. The Bay Colony then prospered, at least initially, sending 100,000 dried cod to market only one generation after the colony was established<sup>80</sup>. The “Body of Liberties”<sup>81</sup> established by the Massachusetts [Bay] General Court in 1641<sup>82</sup>, and the subsequent Colony Ordinances of 1641-47<sup>83,84</sup> provided significant authority for public access to most “great ponds”<sup>85</sup> and to the seashore down to the mean low tide mark (for fishing, fowling, and navigation). Later, England imposed restrictive tariffs in 1660 which excluded most fish originating in colonial markets<sup>86</sup>. Most dried cod thus went to Catholic Spain and Portugal, rather than Anglican Britain<sup>80</sup>. By 1700, Massachusetts was shipping an estimated 50,000 bbl. of dried fish annually<sup>87</sup>.

The early colonists were awed by the apparent vastness of the New England woodlands—the “Great Forest”<sup>88</sup>—the country “...cloathed with infinite thick Woods”<sup>89</sup> (Figure 3). In New England as a whole, woodlands may have covered 95% of the terrestrial landscape<sup>90</sup>. Higginson, Wood, and Morton extolled the products which could be acquired from Massachusetts’ timber: “...pines, and fir that will yield abundance of turpentine, pitch, tar, masts...<sup>91</sup>”, “...good store of Woods...for the building of Ships, and houfes & Mills, and all manner of water-worke...”<sup>92</sup>, and “...Chefnutt...the tymbre whereof is excellent for building...”<sup>93</sup>.

Nevertheless, not all forest products were a component of Massachusetts’ exports and neither New England (nor any other part of North America) supplied a major part of England’s timber needs<sup>94</sup>. William Bradford sent ships to England “laden with clapbord” in 1621 and 1623<sup>95,96</sup> but transportation costs were high and England could buy most of its lumber more cheaply from

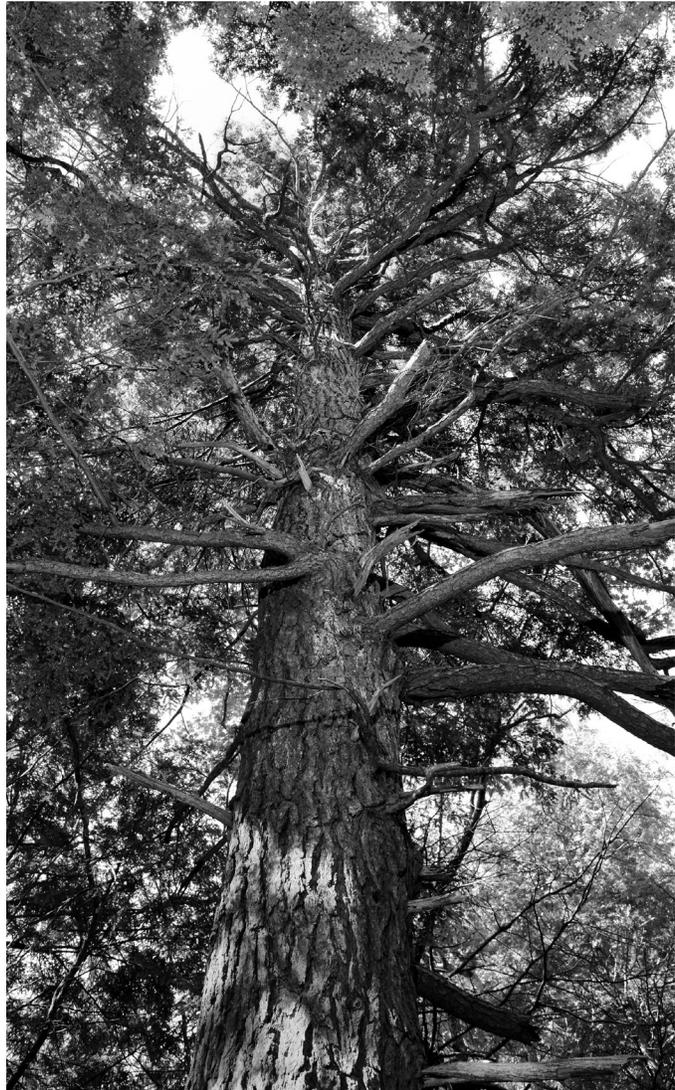


Photo © Bill Byrne

Figure 3. Old growth hemlock, Mount Wachusett.

Scandinavia<sup>97,98</sup>. Barrel staves<sup>99,100</sup>, however, were essential to the wine industry and were exported to Spain. Most lumber was used domestically for structures or fences<sup>92,93,101</sup>, shipbuilding<sup>102</sup>, and especially for firewood<sup>103</sup>. Large white pine (>24 inches)—for ships' masts—were reserved to the King<sup>104,105</sup> in the 1691 Charter of Massachusetts Bay, but were harvested primarily in New Hampshire and southern Maine (due to river access for floating the logs to seaports). In the early 1670s, Sir William Warren (1627-1695) had over 250 masts valued over £35,000 in his timberyards<sup>106</sup>.

In the rapidly developing Connecticut River valley, there was some concern to protect local interests. Springfield voted in 1647 that "...no timber, boards, planks, shingle-timber, nor pipestaves should be carried out of the town from the east side of the river"<sup>107</sup>. In 1699, Northampton forbade the cutting of oak staddles<sup>108</sup> less than nine inches in diameter on common land and Hadley imposed a 12-inch restriction a few years thereafter<sup>109</sup>. However, once the common lands became divided, protective legislation was less frequent and more frequently ignored. Use and devastation of the forests thus continued without any concern as the Colony progressed into its second century, because forests, fish and wildlife were believed to be "furnished by the author of nature with the means of perpetual self restoration"<sup>110</sup>.

The Puritan Commonwealth was dissolved in 1684 and the New England colonies united in 1687 as the Dominion of New England under the governorship of Sir Edmund Andros (1637-1714). He was overthrown in a local revolt in 1689, following the deposing of King James II<sup>111</sup>. Massachusetts (and other entities, later severed) was subsequently chartered as a Crown Colony—the Province of Massachusetts Bay—in October 1691. The Charter was more restrictive of colonists' rights, but also provided for a 2-house General Court (representatives to the lower house being elected annually by Town Meetings), a Governor's Council, and a royal Governor<sup>111,112</sup>. Laws passed by the General Court and signed by the Governor also required the assent of the King. However, England never fully realized the influence of forest and natural products on the New England economy<sup>113</sup> and the inhabitants of Massachusetts (and the other colonies) tended to act in their own interests.

#### THEY DESTROY ALL THAT COMES IN THEIR WAY<sup>1</sup>: THE 1700s.

"It is difficult to express in words the thrill of delight that nerves the breast of the tempest-tossed mariner of the long voyage, when Boston Light heaves into sight, and its bright steady eye beams forth over the sea".— Zebedee Small<sup>2</sup>

Those doughty mariners, approaching land after a long sea journey, were gladdened by the cheering beacon, advising of the nearness of land and yet warning of hazardous rocks and shoals. Still, the danger was not passed, even in daylight, as the ship's navigator still had to contend with tide, wind, or rough seas to conn the vessel into port. So too, the weary passengers, and later their descendants and successors, thrilled with prospects of a new life, yet uneasy with fears of the unknown, faced the beckoning light with the faith and hope that they would prevail over the dark forests and fierce beasts that were obstacles and challenges to their yearning for fertile farmlands, safe homes, and economic success. No wonder they set forth unrestrained. The land was theirs, if bold enough to take it.

Among the many disruptions<sup>3</sup> to aboriginal society was the fur trade<sup>4</sup>, exchanging corn, wampum, trinkets, and other incentives for the hides and pelts of game and furbearers. The extent of this trade quickly became voluminous and Indians were allegedly "...the principal agent in the over-hunting of fur-bearers"<sup>5</sup>. Calvin Luther Martin (b. 1948)<sup>5</sup> ascribed this overkill to a despiritualization of wildlife deriving from the prevalence of foreign epidemic disease and a cascading breakdown of native taboos. This novel thesis has been widely critiqued<sup>6</sup> and the interactions of Indians with their environment<sup>7</sup> are more complex and less idealized than often portrayed. Nonetheless, Indian trade in wildlife products clearly became more intensive post-1600 due to their desire for European commodities, encouraged by European traders, and so deprived of their land and a concomitant sense of personal stewardship. The enterprise took its toll on both wildlife and natives, and as settlement reached its centennial, the fur trade shrank to a minor component of the Provincial economy.

The European colonists and their successors also displayed an interaction between their spirituality and exploitation of the forests and wildlife. While believing that God required man to "...replenish the earth, and subdue it: and have dominion over the fish of the sea, and over the fowl of the air..." (Genesis 1:28), some also thought that wanton destruction was "...displeasing to Almighty God, who abhorreth all willful waste and spoile of his good Creatures"<sup>8</sup>. A few religious leaders condemned those changes which contradicted the original Puritan ideals but there was scant thought given to ending trade in natural products, implementing conservation practices, or condemning expansion of the frontier<sup>9</sup>. Eventually, the successors and descendants of those hardy pioneers continued to subdue and exploit a once-vast once-forested environment to survive and prosper in a new homeland. They came slowly to develop their own traditions, attitudes, and practices and to appreciate, interact with, and manage the changed land—a once fearsome wilderness—that became the Commonwealth of Massachusetts.

Politically, the period following the issuance of the Charter of 1691 continued the practice of benign neglect by England, which had been in effect since settlement. A series of 16 colonial governors—seven serving five years or longer—administered the Royal Province during its 73-year existence<sup>10</sup>. The early years were characterized by a series of French and Indian wars (1689-1713)<sup>11</sup>, largely fought northward of Massachusetts. These wars inhibited trade, increased taxes, and weakened the Massachusetts economy. Later, another war against the French (1745-1753) spilled over into Massachusetts, but ended disastrously for the French<sup>11</sup>. The cessation of warfare allowed Massachusetts to expand westward and restructured the relationship between England and the colonies<sup>10,12</sup>. The consequent increase in tensions, and the burdensome Intolerable Acts imposed by the Royal government, was followed by a series of riots and rebellions. This burgeoning hostility of the colonials inevitably led to the downfall of the Royal governors and their military successor, and ultimately to the War of American Independence<sup>13</sup>. John Hancock (1737-1793) was sworn in as the first governor under the Massachusetts Constitution of 1780<sup>14</sup>. Following the Treaty of Paris in 1783, the several colonies banded together in a Confederation until replaced by the Constitution of the United States in 1789<sup>10</sup>.

The fur trade had largely wound down by the mid-1700s. The Boston trade "...is sunk to little or nothing, and the market is so low for beaver in England that 'tis scarce worth the transporting"<sup>15</sup>. A cargo from Oxford (Mass.) shipped to England in Aug. 1703 comprised otter, beaver, raccoon, deer, and other skins valued at a mere £44<sup>16</sup>. Weak activity on the Connecticut River persisted until about 1750 but the glory days of the Massachusetts fur industry were past. However, the New York trade was far

from finished, and merchants in Albany (N.Y.) dominated the regional trade until about 1730<sup>17</sup> due to the loyalty of the Six Civilized Nations. Then, other business pursuits took over, and smaller firms persisted in the trade until the Revolutionary period. In Massachusetts, due both to habitat changes and to commercial trapping, the beaver had already vanished<sup>18</sup>, probably around the time of the Revolution<sup>19</sup>.

Despite the precipitous decline in the commercial export of hides and furs, the colonists continued to hunt, trap, and utilize wildlife. One activity drawing their attention was the desire to destroy animals which preyed upon their valued crops and livestock. Despite increasing scarcity, the wolf remained the chief villain well into the 1700s. In Hampshire County, 2852 adults and 191 pups were taken for bounty between 1700-1737<sup>20</sup>. Even later, wolves were numerous and troublesome in Wenham in 1752-57<sup>21</sup>. As late as 1779, a wolf killed 5 sheep in Newbury on Massachusetts' north shore<sup>22</sup>. Lenox in the Berkshires was so bothered by wolves in 1782 that the town voted a bounty of 40 s. in addition to that of the Province<sup>23</sup>. After these rare occurrences, wolves were virtually exterminated from Massachusetts.

Elk also vanished from Massachusetts during the 1700s. The animal was undoubtedly on the fringe of its range<sup>24</sup>—if a resident at all—with most reports merely suppositional<sup>25</sup>. The only definite record is of a herd of 15 (one shot) in Lancaster in 1742<sup>26,27</sup>.

Birds and mammals were also commonly hunted and trapped for human food, often for personal or local consumption. Judge Samuel Sewall (1652-1730) had a breakfast of "...Venison and Chockalatte." at Dorchester in October 1697<sup>28</sup> and in October 1701 he supped on "...Roast-Beef, Venison Pasty, Cake, and cheese..."<sup>28</sup> at a wedding party. Market or commercial hunting was alleged to be uncommon in southern New England except near the larger towns<sup>29</sup>. However, at Northampton in the Connecticut River Valley of Massachusetts, dressed wild turkeys brought 16 d. each in 1717 and 2½ d. per pound in 1766<sup>30</sup>. In the same area, bear meat sold for 1½-2 d. per pound c. 1721-59<sup>30</sup>. In Boston, passenger pigeons sold for 18 d. per dozen in 1740<sup>31</sup>, but in Northampton 3-6 d. per dozen in 1728-85 and 9 d. per dozen in 1790<sup>30</sup>. Heath hens "...were so common on the ancient site of the city of Boston, that laboring people or their servants stipulated with their employers not to have the *Heath-Hen* brought to table oftener than a few times in the week!"<sup>32</sup>. Ducks, geese, and shorebirds<sup>33</sup> were also commonly taken. In 1710, the Provincial Legislature—distressed at the decline of "water-fowl" in coastal towns—enacted a law prohibiting hunting of them from "disguised" boats or sailboats<sup>34</sup>. Pelts, hides and feathers were also used for jackets, breeches, leggings, gloves, hats, belts, quilts, and footwear<sup>30,34,35,36</sup>.

The colonists and settlers, initially inexperienced due to their social status in Britain, soon learned to employ firearms for self-defense, hunting, and entertainment. The matchlocks of the Puritans were succeeded by flintlocks, some imported, others hammered out by local blacksmiths and later by skilled gunsmiths<sup>37</sup>, culminating in the early 1800s in the renowned Pennsylvania or Kentucky-style long rifle. Despite allegations to the contrary<sup>38</sup> (later discredited<sup>39,40</sup>), muzzle-loading firearms were a common and valued possession in the American colonies and provinces of the 1600s and 1700s<sup>37,40</sup>. Life was challenging and demanding and firearms were a tool to enable people to survive, settle and flourish in an environment where physical fitness and mental convictions were continually tested.

In addition to commercial fishing endeavors, recreational angling was a favored colonial pastime. In 1794, a 90-year-old resident of Raynham described "taking many

a fish” when he was a boy angling from a canoe in Fowling Pond<sup>41</sup>. Nearby, the Rev. Joseph Secombe (1706-1760) angled for salmon, alewives, herring, and eels at Amoskeag Falls on the Merrimack River. He argued in 1739 that “But here, in Fishing... we are all taking something, which God, the Creator and Propagator of all, has given to us to use for Food, as freely as the green Herb. He allows the eating of them, therefore the mere catching them is no Barbarity”<sup>42</sup>.

The commercial cod fishery continued to be the most important Massachusetts fishery in the colonial period<sup>43</sup>, providing substantial resources and employment to the provincial economy<sup>43</sup>. Cod fishing grew significantly after the Treaty of Utrecht in 1713, diminishing again during the French and Indian Wars, and reviving after the 1763 Peace of Paris. In 1731, there were 160 vessels and 5000-6000 fishermen sailing from Marblehead alone<sup>44</sup>. In 1747-48, Salem merchants shipped 32,000 quintals<sup>45</sup> of dry codfish<sup>44</sup>. After the Revolution, in the newly independent United States, President John Adams (1735-1826) argued (and prevailed) that American fishermen had the right to fish on the Grand Banks and in the Gulf of Saint Lawrence<sup>44</sup>. The cod fishery (Figure 4) was key to the success of the early colonists, one writer arguing that “...neither Pilgrims or Puritans were its pioneers, neither the axe, the plough, nor the hoe led [them] to these shores...It was the discovery of the winter fishery on its shores that led New England to civilization, and fed alike the churchmen and the strange emigrants who came with the romance of their faith in their hearts...”<sup>46</sup>.

Whaling was also a business of considerable economic importance for Massachusetts through the 1700s, yielding whale oil for lighting and lubricants, whalebone for corset stays and similar purposes, and ambergris for medicines. Deep sea whaling began about 1712 but predominated (over shore-based whaling) by 1730. It reached a peak just before the Revolution, but then declined until c. 1820 when another surge began<sup>43,47</sup>.

Anadromous fish—salmon, shad, river herring, and sturgeon—were also subject to commercial harvest. Connecticut shad in barrels were advertised in Boston as early as 1736. On the Connecticut River, shad averaged 1 penny each between 1733-1773, increasing to 2½- 3 d. in 1788, and 4½ d. in 1798<sup>48</sup>. After 1800, shad were scarce, increasing to 1 s. each and people stopped buying them. Similarly, salmon there were initially cheap, 1-1½ d. per pound in 1740, increasing to 2-3 d. in 1781, and 7-8 d. in 1798<sup>48</sup>. After that, dams impeded the run and very few fish were taken. On the

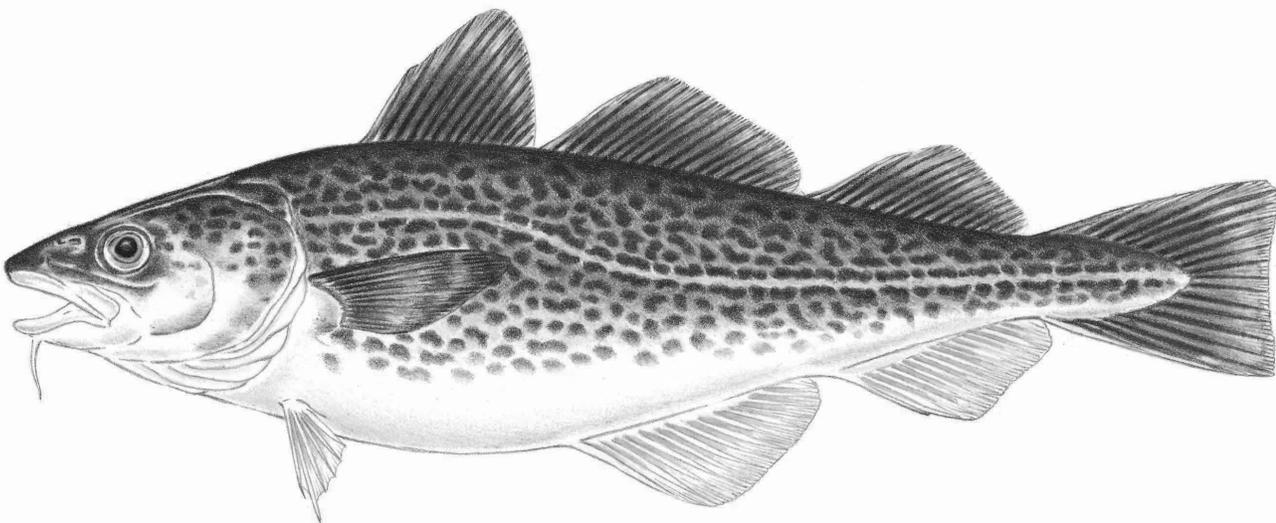


Figure 4. Atlantic Cod.

Merrimack River in 1789, salmon of an estimated market value of \$31,200 and shad of \$700,000 were taken<sup>49</sup>. Realizing the value of the fishery, between 1709 and 1799 the Provincial government (and subsequently that of the State) enacted or amended 64 statutes addressing seasons, dates, and methods of harvest for anadromous fish (principally alewives)<sup>50</sup>. The pernicious effects of dams were also recognized very early with the Legislature requiring in 1741<sup>51</sup> that dam builders make provisions for the passage of anadromous fish. However, 100 years later one scientist lamented: “The building of dams...has almost entirely annihilated this species in our state”<sup>52</sup>. The Turners Falls dam (constructed in 1798) was ultimately responsible for extirpating Atlantic salmon from the Connecticut River.

Settlement was pushing well into present-day Hampden, Hampshire, Worcester, and southern Berkshire counties by 1765<sup>53,54</sup>. Initially, land clearing proceeded slowly, land speculation was common, and small-scale agriculture served only small localized groups<sup>55</sup>. Later, as settlement increased<sup>55</sup>, transportation improved, and new markets emerged, agriculture became commercialized and deforestation more frequent<sup>55</sup>. In August 1733, the Connecticut Valley towns were urged to improve the growth of timber, and restrictions were imposed, but rescinded in 1741<sup>57</sup>. By about 1730, land speculation was rampant<sup>56</sup> as was the consequential clearing of the land. Settlers “...ought to inclose and reserve portions of the best woods for the future use of themselves and the general good of the country...”<sup>58</sup>, but they rarely did so. Trees were “...cut down or killed, and the land burnt, leaving a desolate tract of blackened stumps, half-burnt logs, loose soil, and ashes”<sup>59</sup>. In Worcester County, Peter Whitney (1744-1816) remarked “...as there is very little waste land, and the people are numerous, fuel will in a few years be scarce and dear”<sup>60</sup>. About 1765, when Hadley was a village of 100 families, the annual consumption of firewood was about 3000 cords<sup>57</sup>. These bleak and devastated clearings then slowly transformed into productive croplands and grassy pastures subdivided by stone walls, cozy farmhouses, and thriving small villages<sup>55,61</sup>.

By 1790, the newly constituted Commonwealth of Massachusetts boasted a population of 378,787<sup>62,63</sup>, 9.7% of that of all states then existing. In the next century, Massachusetts would continue the shift from the daring frontier pioneers, to the small settlers eking out a sparse life, to the homebody farmers on the cleared and planted lands, to the mills and factories of an increasingly urbanized populace. So too, would human attitudes towards their environment evolve.

### *NON NOBIS SOLUM*<sup>1</sup>: 1800-1865

“Nature, in its ministry to man, is not only the material, but is also the process and the result...The wind sows the seed; the sun evaporates the sea; the wind blows the vapor to the land; the ice, on the other side of the planet, condenses rain on this; the rain feeds the plant; the plant feeds the animal; and thus the endless circulations of the divine charity nourish man”.— Ralph Waldo Emerson (1849)<sup>2</sup>

Samuel Adams (1722-1803) succeeded to the office of Governor after the death of Hancock. His administration accomplished little<sup>3</sup>, due to Federalist opposition. The Federalist policy emphasized commerce and trade to the near exclusion of all else<sup>3,4</sup>.

The tonnage of cod fishing vessels increased from 19,185 tons in 1789 to 69,306 in 1807<sup>5</sup>. Commerce benefited from a series of commercial treaties in 1794-1805, and from the opening of trade with China and the Orient generally<sup>5</sup>. So, New England—especially Massachusetts—was a reluctant supporter of the War of 1812, due to the paralysis of shipping, a nearly bankrupt government, and the perception that England was winning<sup>3</sup>. After the end of the war, Massachusetts reigned supreme in the maritime trade<sup>4</sup>, especially in the ranking towns of Boston, Nantucket, and Newburyport. Boston shipping alone was 310,309 tons in 1807, one-third of the mercantile value of the United States<sup>4</sup>. However, this coastal boom had little initial effect on the economy of the inland regions. There was almost a total disconnect between the merchant kings and the dirt farmers of western Massachusetts. Capital improvements were minimal and crop yields low<sup>4</sup>. Meanwhile, factories, especially the wool, cotton, and boot-and-shoe industries, began to spring up in the eastern towns (Lowell, in 1822, was among the first)<sup>6</sup>.

With the advent of railroads, new factories cropping up in Worcester and Springfield<sup>7</sup>, and improvements in farm machinery, western Massachusetts began to perk up<sup>6,8</sup>. By 1845, Massachusetts was producing 4,767,000 bushels of Irish potatoes and 265,500 pounds of tobacco<sup>8</sup>. The railroads proved to be a false hope, however, by expanding into New York and opening Massachusetts to competition with western markets and cheaper products<sup>6</sup>. Smaller, less productive farms failed<sup>9</sup> and their proprietors shifted to factories and industry, or moved to the fertile lands of the Ohio Valley, or to California to seek a fortune in the gold fields<sup>10</sup>. The remaining Massachusetts farmers focused on truck crops, dairying, and tobacco. In the cities, urbanization and industry continued to rise, and the Civil War loomed. Despite the war, by 1863, under the Morrill Act of 1862, the Massachusetts Agricultural College<sup>11</sup> was approved and incorporated, with the first class graduating in 1867<sup>8</sup>. However, the number of manufacturing factories grew from 8176 in 1860 to 13,212 in 1870<sup>12</sup>. By 1880, 42% of the labor force was in manufacturing and only 10% in agriculture<sup>12</sup>.

The Massachusetts “frontier”—the boundary with the last few unsettled tracts—was breached by 1801<sup>4,13</sup> and the wilderness vanished. The Pequot and ordained minister William Apess (1798-1839) argued—unsuccessfully—in 1835 that the few remaining “Marshpee” Indians (descendants of those who greeted William Bradford and his compatriots) who were “...all kept in a state of vassalage...”<sup>14</sup> by state-appointed overseers, should be allowed to “...manage their own property...” as they once did. In 1862, Senator Samuel Clarke Pomeroy (1816-1891) of Kansas, an advocate of the expansionist Homestead Bill, declaimed “This bill, enacted into a law, shall give civilization and life throughout the silent gorges and gentle sleeping valleys, far away into the deep recesses of the continent...”<sup>15</sup>. Finally, the historian Frederick Jackson Turner (1861-1932) proclaimed in 1893 that “four centuries from the discovery of America, at the end of a hundred years of life under the Constitution, the [national] frontier has gone, and with its going has closed the first period of American history”<sup>16</sup>.

The early part of the 19th century saw a continuation of the forest clear-cutting that prevailed after the Revolution. Tench Coxe (1755-1824) suggested that settlers who clear their land “...take care to burn the brush and wood, in such manner as to preserve the ashes. Out of the wood ashes, thus saved, he should make as much potash, or pearl-ash, as he can, and dispose of this for ready money...”<sup>17</sup>. Thus, the frenetic land clearing served to facilitate both planting and fertilizing of crops and a secondary financial remuneration. The Rev. Timothy Dwight (1752-1817) reported that “...a prodigious mass [of timber is] annually destroyed in the recent settlements for the mere purposes of clearing the ground”<sup>18</sup>. In Hadley, there were “...meadows containing five



Figure 5. Grassland at Massachusetts Military Reservation, Cape Cod.

to five hundred acres, interspersed with beautiful and lofty trees..[and] also vast expansions of arable ground...”<sup>18</sup>. In addition, dwellings, barns, churches, stores, and other structures were built practically all of native lumber<sup>19</sup>. The clearing of the forest continued rapidly through the mid-1800s, with open land peaking at 50-75% and exceeding 90% in some towns<sup>10,20</sup>.

The Berkshires were the last to be cleared and never fully converted to agriculture<sup>20</sup>. North-central portions of Massachusetts, as well as the sandy scrub forests in Barnstable and Plymouth counties, also escaped the full impact. But, the infant “Conservation” had begun to speak, and not for us alone: “...the preservation and improvement of the forests...must be effected on a large scale, on a system wisely begun and long continued, by the men of one generation for those of the next”<sup>21</sup>. Similarly, the diplomat and conservationist George Perkins Marsh (1801-1882) of Vermont decried the idea that natural resources were superabundant and inexhaustible. In his chapter “The Woods”, Marsh suggested that “We can repay our debt to our noble forefathers only by a like magnanimity, by a like self-forgetting care for the moral and material interests of our own posterity”<sup>22</sup>. At about the same time, Henry David Thoreau (1817-1862) urged farmers to plant trees in natural patterns of succession; “...when we experiment in planting forests, we find ourselves at last doing as Nature does”<sup>23</sup>.

The extensive conversion of forest land to agriculture also led to substantial changes in wildlife communities<sup>24</sup>, notable among them an increase in grassland<sup>25,26</sup> (Figure 5) and shrubland<sup>27</sup> species at the expense of forest wildlife. Moose were gone (except as rare vagrants) by 1800<sup>28</sup>. Wolves were also nearly eradicated. Two lone wolves ranging from Amherst to Montague in 1805<sup>29</sup> were hunted down and killed although occasional vagrants may have occurred through 1869<sup>30</sup>. Wild turkeys were extirpated from Massachusetts in 1851<sup>31</sup> and the last known cougar was killed in Amherst in 1858<sup>32</sup>.

The early 1800’s also saw the rise of nature writing, naturalists’ organizations, scientific investigations, and sportsmen’s groups. The Boston Society of Natural History was incorporated in February 1831 “for the promotion of the science of natural

history”<sup>33</sup>. In 1837, the Massachusetts Legislature resolved that the governor was authorized to appoint a person(-s) to “...make a further and thorough geological, mineralogical, botanical, and zoological survey of the Commonwealth”<sup>34</sup>. The “Commissioners” so appointed reported to the Legislature in 1838-41 and subsequently published their surveys between 1839-1846 in a series of five books<sup>35</sup>. These surveys comprised the baseline faunal and floral surveys of the state, from which all subsequent ones proceeded.

Hunting, too, began to draw a close focus. The sportsman Thomas Doughty, writing in the *Cabinet of Natural History and American Rural Sports* in 1830, set forth the first code of conduct for sportsmen, admonishing them to be respectful, neat and clean, and displaying a correct demeanor, “free from inpetuosity”<sup>36</sup>. Senator Daniel Webster (1782-1852) of New Hampshire and Marshfield was an avid and conscientious sportsman, especially fond of hunting waterfowl and shorebirds along the coast and quail and ruffed grouse in the grasslands and thickets of Plymouth County<sup>37</sup>. Elsewhere in the Northeast, Samuel Haight Hammond (1809-1878), an early hunter-conservationist, advocated the preservation of wilderness areas for recreation and rejuvenation: “Where shall we go to find the woods, the wild things, the old forests, and hear the sounds which belong to nature in its primeval state?...I would mark out a circle of a hundred miles in diameter...and make it a forest forever”<sup>38</sup>.

The marine fisheries continued to be important in the Massachusetts economy, including the cod<sup>39</sup> and mackerel<sup>40</sup> fisheries. Hand-lining from dories gave way to line trawls after about 1850<sup>39</sup>. The cod and mackerel fishery fleet peaked in 1873 with a tonnage of  $\approx 100,000$ <sup>41</sup>. Haddock was also important at times and in 1850 immense quantities were caught in trawls in Massachusetts Bay<sup>40</sup>. Swordfish were also taken, particularly south of Cape Cod, where it was the “fish most pursued”, selling for 3-5¢ per pound in 1844<sup>42</sup>. The whaling industry continued to be strong following the War of 1812, with 82 whaleships based at Nantucket in 1817<sup>43</sup>. Whaling peaked in 1836, with vessels totaling 144,681 registered tons in the U.S., and 64,260 at New Bedford<sup>43</sup>. By the Civil War, however, whaling declined as kerosene replaced whale oil for lighting.

Freshwater angling—like recreational hunting—was popular among some, but allegedly uncommon. Jerome Van Crowninshield Smith (1800-1879) acclaimed “...that highly esteemed and well known fish, the trout, which is unrivalled, either as an object of gratification to the palate of the epicure, or as contributing to the innocent sport of the angler”<sup>44</sup>. He enthusiastically appended a treatise on “Trout and Angling” to his flawed *Natural History of the Fishes of Massachusetts*. Sen. Daniel Webster was an angler as well as a hunter, favoring the cold streams of Mashpee and Sandwich on Cape Cod. He once took 12 trout, weighing 17 lbs. 12 oz. in total, from that area, with the largest weighing 2 lbs. 8 oz.<sup>45</sup>. Yet, despite the angling interest, many freshwater fish (both in volume and in species) continued to be taken only for sale in markets.



Photo © MassWildlife

Figure 6. Inlet to Flax (Union) Pond, Wareham, August 1956.

A veteran angler, Samuel Trescott Tisdale (1802-1869) of East Wareham, observed the “depletion of the trout streams” in southeastern Massachusetts, attributing this to the expansion of the railroads (i.e., increased pressure on the fisheries) and expansion of “manufacturing interests” (i.e., habitat destruction and pollution). Tisdale thus decided in May 1850, in collusion with a fellow angler, Preston H. Hodges, to import the “black bass of the northern lakes” from Saratoga Lake, N.Y.<sup>46</sup>. Hodges left Saratoga on July 1, 1850 with 28 live fish, arriving in Agawam<sup>47</sup> on July 4 and placed the fish in Flax Pond (now known as “Union” Pond) (Figure 6). Tisdale was elated and imported 100 additional bass in November, distributing them in six other ponds in Plymouth Woods. This endeavor was repeated in 1851-52 by Tisdale and others, stocking >30 additional ponds in the area so as to “teem with this superior fish”<sup>46</sup>.

The Massachusetts Legislature enacted about 295 laws between 1800-1865 pertaining to fish and fisheries<sup>48</sup>. About 133 (45%) of these addressed alewives, herring, and shad (principally to allow towns to regulate these fisheries); 49 provided for acts of incorporation or to allow individuals to construct fish weirs; and 27 addressed general issues relating to dams and fish passage. Only seven concerned protection of the trout fisheries in southeastern Massachusetts<sup>49</sup>. Other protective laws addressed fish spearing (c. 60, St. 1806); smelt fishing (c. 112, St. 1811); seasons for salmon and shad on the Connecticut River (c. 103, St. 1812); eel fishing (c. 132, St. 1812); pickerel fishing (c. 109, St. 1817); prohibiting the taking of fish by means of *Cocculus indicus*, a toxicant (c. 43, St. 1831); establishing a study commission on fish propagation (c. 58, Res. 1856); and prohibiting fishing on Sunday (c. 253, St. 1865)<sup>47</sup>. In the distant future, most of these statutes would be addressed in regulation. However, the transition from a concept of inexhaustible resources to finite ones was still new, and there was as yet no agency to regulate, manage, and investigate living natural resources.

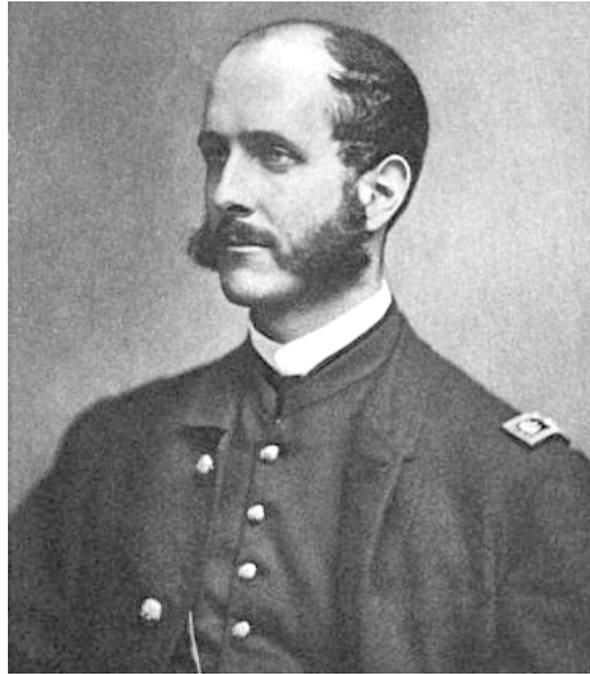
The protection of wildlife (“game”) lagged well behind that for fisheries but still reflected changing societal attitudes. Between 1802-1870, legislation was enacted regarding seasonal restrictions on deer hunting and hounding<sup>50</sup>; seasonal protections on larks, robins, partridge, and quail<sup>51,52</sup>; prohibitions on shooting on salt marshes except by landowners<sup>53</sup>; seasonal restrictions on heath hen hunting<sup>54</sup>; seasonal restrictions on night hunting of shorebirds<sup>55</sup>; a 4-year closure on heath hen hunting<sup>56</sup>; additional seasonal restrictions on shorebird hunting<sup>57</sup>; and additional constraints on the hunting and sale of certain songbirds<sup>58</sup>.

Significantly, in 1842<sup>59,60</sup> the U.S. Supreme Court declared that: “When the Revolution took place, the people of each state became themselves sovereign, and in that character held the absolute right to all their navigable waters and the soils under them for their own common use, subject only to the rights since surrendered by the Constitution to the general government...When the people of New Jersey took possession of the reins of government and took into their own hands the power of sovereignty, the prerogatives and regalities which before belonged either to the Crown or the Parliament, became immediately and rightfully vested in the state”. This landmark case thus set forth the principle of the Public Trust Doctrine—the concept that free-living fish and wildlife cannot be privately owned.

More was yet to come. In 1865, the Governors of New Hampshire and Vermont were concerned about obstructions (i.e., dams) to the passage of anadromous fish on interstate rivers. They communicated that concern to the Massachusetts Legislature, which resolved<sup>61</sup> that the Governor was authorized to appoint two “Commissioners”<sup>62</sup> to investigate and report on their findings. Theodore Lyman III<sup>63</sup> (1833-1897) (Figure 7) and Alfred A. Reed were duly appointed and submitted their report to the Legislature

on January 10, 1866<sup>64</sup>. Their conclusions—basically requirements to successfully restock the rivers with shad and salmon—were to: (1) build fishways over the dams, (2) prevent water pollution, (3) initiate the breeding of salmon in New Hampshire, (4) ban gill-nets and weirs in Connecticut, and (5) enact stringent laws regulating fishing in all states bordering the Connecticut River.

Another significant consequence of the 1865 report was an Act of the Legislature<sup>65</sup> providing for the appointment of two commissioners to be Commissioners of Fisheries on the Merrimack and Connecticut Rivers, for a term of office of five years. This Act, effective May 15, 1866<sup>66</sup>, was the beginning of the state agency now known as the “Division of Fisheries and Wildlife”.



*en/wikipedia.org (public domain)*

Figure 7. Commissioner of Fisheries Theodore Lyman (Civil War era).

## THE “BOARD OF COMMISSIONERS” YEARS, 1866-1919: A SUMMARY

The two-member Board of Commissioners of Fisheries was established in May 1866 and expanded to three members in 1869. During the Commissioners’ 53-year tenure, their accomplishments and activities included:

—examining the dams on the Merrimack and Connecticut Rivers, ascertaining the issues, if any, to fish passage, and recommending methods and plans for constructing fishways. Those on the Merrimack were completed by 1867; however, the hydropower authorities on the Connecticut were recalcitrant. The Commonwealth filed suit, and prevailed in both the Massachusetts (1870) and United States (1872) Supreme Courts.

—worked cooperatively with New Hampshire to restore a reproducing sea-run population of Atlantic salmon to the Merrimack River. Between 1876-1889, ≈6.3 million fry were released into the Merrimack system (in 2 states) and ≈22,600 adult salmon were passed through the Lawrence fishway. The program ultimately failed because migrating salmon could not pass the Sewalls Falls dam in New Hampshire.

—in cooperation with private individuals, propagated shad at North Andover and Hadley, and stocked millions of shad fry in the Connecticut and Merrimack rivers. Illegal harvest and exploitive capture methodology doomed the effort, at least during the Commissioners’ tenure.

—constructed, acquired or utilized fish hatcheries at Wareham (1868-1870), Winchester (1870-1911), Plymouth, N.H. (joint with N.H., 1878-1895), Sutton (Wilkinsonville, 1891), Hadley (1896-1906), Adams (1898-1916), Sandwich (1911), East Sandwich (1914), and Palmer (1914).