

on January 10, 1866⁶⁴. 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 Legislature⁶⁵ 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, 1866⁶⁶, was the beginning of the state agency now known as the “Division of Fisheries and Wildlife”.



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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).

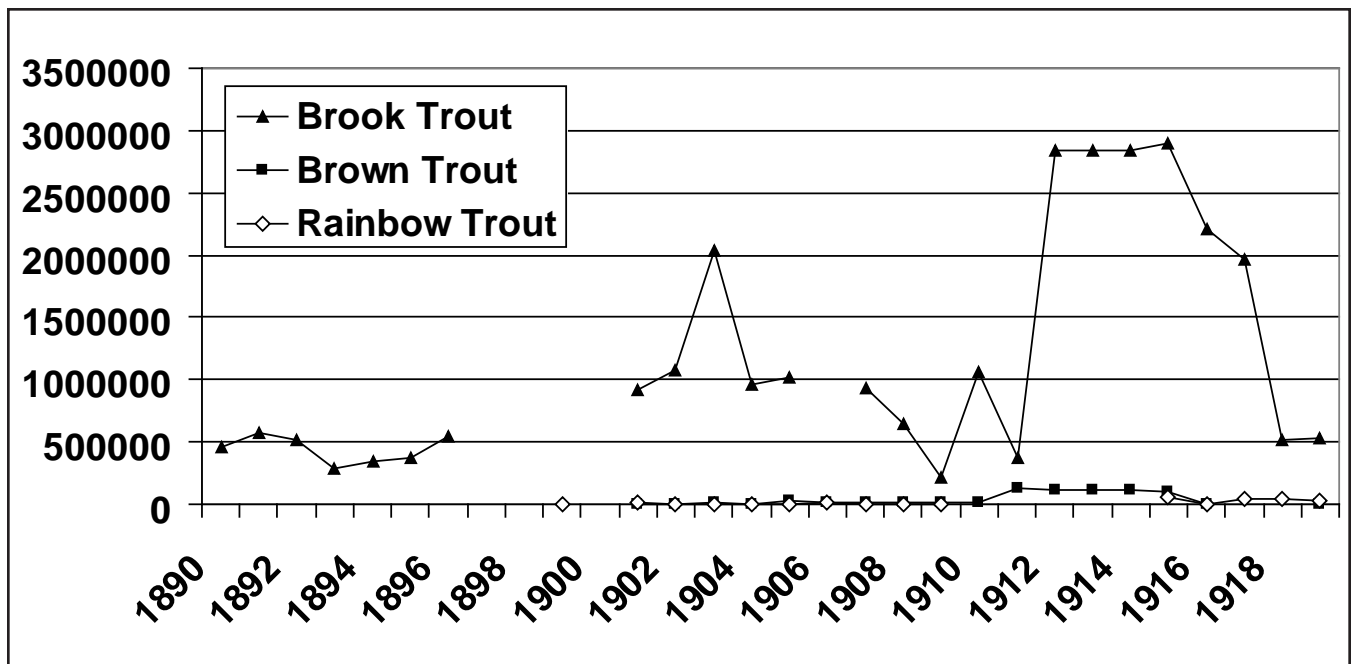


Figure 8. Numbers of Brook, Brown and Rainbow Trout (all age classes) stocked in Massachusetts waters, 1890-1919.

—obtained, propagated, stocked into rivers, stream, and ponds or distributed to private cooperators various species (several unsuccessfully) including brook trout, brown trout (including varieties), rainbow trout (Figure 8), lake trout, landlocked salmon, Chinook salmon, smallmouth bass, largemouth bass, common carp, white perch, yellow perch, walleye, horned pout, pickerel, and freshwater smelt.

—instituted and conducted biological and physical surveys of the great ponds of the state, with emphasis on their suitability for food fish production.

—hired its first biologist (1905) and later an assistant biologist, working primarily on fish and shellfish.

—received legislative authority to act as Game Commissioners (1886) and so undertook subsequent game management activities.

—constructed game farms at Wilbraham (1912) and Marshfield (1914), and utilized temporary cooperative game rearing facilities at Andover, Norfolk, and Sharon, as well as undertaking game breeding at the Winchester and Sutton hatcheries.

—acquired legislative authority to acquire or occupy properties for “reservations” or game refuges, and conducted surveys and habitat management activities on most. Acquired a large tract on Martha’s Vineyard as a heath hen refuge and hired a warden to oversee the area.

—imported Mongolian pheasants from Oregon (1895) which were subsequently propagated and distributed to cooperators and the progeny stocked throughout the state. The Commissioners then promoted and implemented a pheasant hunting season.

—obtained, propagated, stocked into the fields and woodlands of the state or distributed to private cooperators various other game species (most were unsuccessful), including Reeves pheasant, bobwhite quail (including varieties), wild turkeys, mallard ducks, black ducks, wood ducks, Canada geese, white (i.e., snowshoe) hare, “Belgian hare” (i.e., European rabbit), and raccoons.

—investigated white-tailed deer status and distribution, promoted a closed season (approved by the Legislature) which reopened in 1910 (after an 11-year closure) and was then administered for recreational hunting and deer damage control.

—promoted, secured, and instituted hunting licenses for aliens (1905), non-residents (1907), resident aliens (1908), resident citizens (1908), fishing (all persons except minors and women)(1919), and minor trapping (1919).

—undertook surveys and inventories and protective measures—including the hiring of special wardens—regarding song and insectivorous birds, most birds of prey, and gulls and terns.

—investigated and recommended legislative action on seasons, bag limits, and methods of take for upland game birds and mammals, waterfowl and other migratory game birds, and furbearers.

—instituted, expanded and maintained educational and informative programs including exhibitions, lectures, and publications.

—actively engaged in cooperative ventures, meetings, and conferences on the state, regional, and national scenes.

—increased and professionalized the force of law enforcement deputies.

OBSTRUCTIONS TO THE PASSAGE OF FISH: 1866¹-1869

The Civil War was barely ended when the Legislature voted to investigate fish passage issues, a progressive move because the citizenry was still grieving the loss of 13,942 sons of Massachusetts (9.4% of those serving) in battle or from battle-related illness². The Republicans were the party in power in the state, and continued so for 25 years, with the primary aim of sustaining the Federal government and its policies³. A significant and long-lasting result of the war was the allegiance which the ordinary citizen attached to the interests of the Nation over that of the State³. In the following decades, prohibition, labor reform, women's suffrage, transportation, police protection, and public health demanded government attention and regulation³.

Massachusetts had become the second most densely populated state (after Rhode Island)⁴ and the 1860s was the period of greatest growth in manufacturing, with capital investment growing by 74%. Boston—"The Athens of America"—was the country's fourth largest manufacturing center in 1865⁴ and soon became a hub for financial management as well. This rapid modernization had significant consequential effects for workers, as well as for the environment. Fortuitously, fisheries and game matters continued to hold reasonable Legislative interest, despite the social focus on modernization.

1866⁵: The 1866 Act⁶ directed the two Commissioners to "examine the several dams on said rivers in this Commonwealth, and shall, after notice to the owners of said dams, determine and define the mode and plan upon which fish-ways shall be constructed suitable and sufficient, in their opinion, to the free passage of salmon and shad up said rivers during their accustomed seasons".

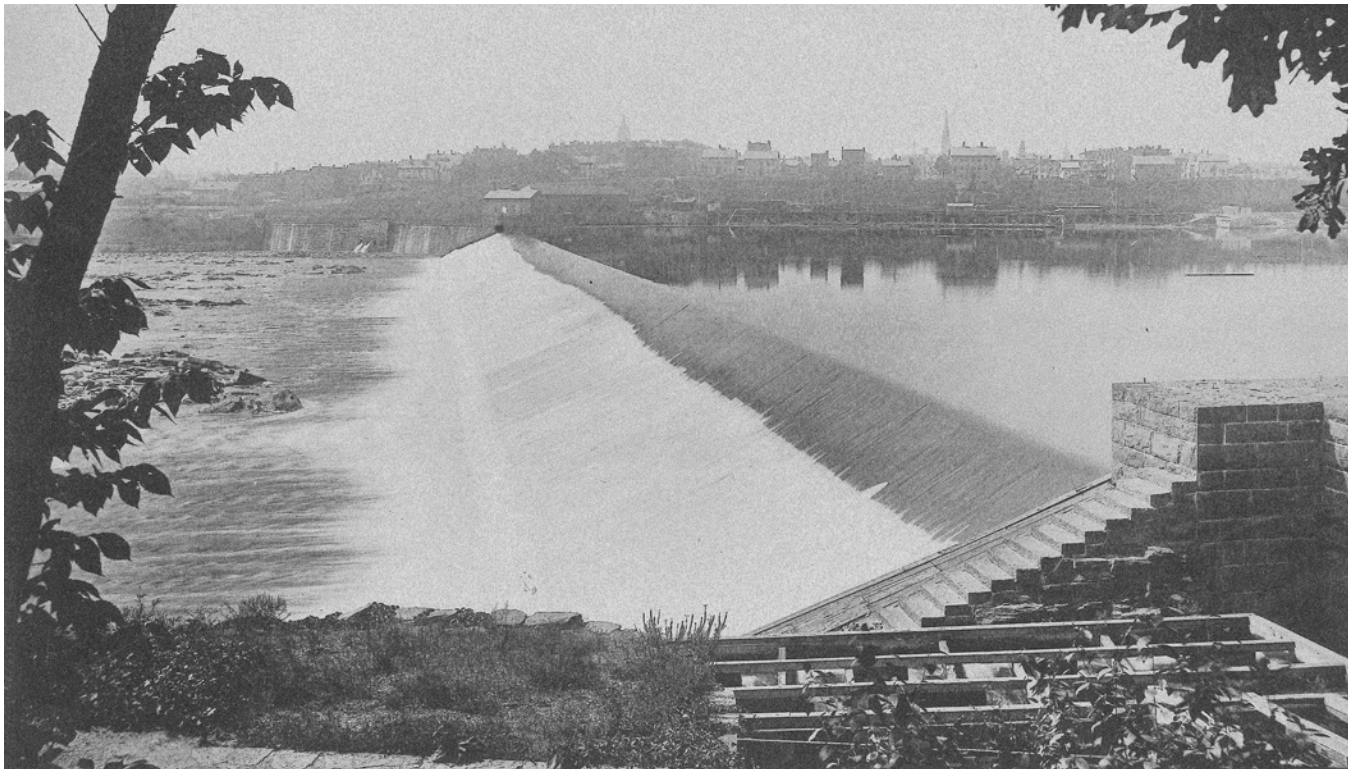


Figure 9. Holyoke Dam, as seen from the East Bank of the Connecticut River, 1887.

—The Commissioners’ first report under this Act described their field evaluations and recommended that: (1) \$10,000 be appropriated for the coming year, (2) seine fishing, or the taking of shad or salmon in any manner, be prohibited above the Lawrence Dam on the Merrimack until 15 April 1871, (3) the same provision to prevail below the Lawrence Dam from 15 April 1868 until 15 April 1870, (4) they be allowed to take fish to restock the river, (5) a fine $\leq \$50$ be established for fishing within 400 yards of a fishway, and (6) they be empowered to cause tributaries of the Connecticut and Merrimack Rivers to be open to fish passage by compelling dam owners to construct fishways⁶.

1867⁷: The Commissioners reported that the fishways at Lawrence and Lowell were completed in the spring of 1867 and the Merrimack was open to fish passage after 18 years. However, the “great Hadley Falls” dam (Figure 9) on the Connecticut remained “unbridged”.

—They commented at length on the “artificial breeding” of trout and shad and remarked that Seth Green had begun to hatch shad eggs at Holyoke in the summer of 1867.

—Echoing the earlier words of George Perkins Marsh, and foreseeing the later ones of Garrett James Hardin (1915-2003)⁸, Lyman and Reed complained that “...the legislature passes game laws, and nobody pays any attention to them...Because we insist on considering wild animals as our remote forefathers consider them, when men were scarce and wild animals were plenty...a vague idea that [game] by immemorial right, belonged to anybody and everybody”. They lamented that a 1-lb. trout—probably speared illegally in its “bed”—could be bought for 50¢ and the vendor then swears that it was caught out of state.

—The Commissioners of the New England states informally organized as the “New England Commissioners of River Fisheries” and met from time to time to establish a common policy for New England and attempt to restore indigenous fishes and introduce new ones.

1868⁹: The Commissioners' third report complained that the Holyoke Water Power Company was stonewalling their obligation to build a fishway over their dam on the Connecticut River. The Concord, Ipswich, and Merrimack Rivers had all been successfully opened.

—A.C. Hardy, an agent for the Commissioners, began hatching shad at North Andover in 1868 (continuing until 1871) with reasonable success. A small hatching facility was established that same year at Maple Springs, on a tributary of the Agawam River in Wareham, by donation of Samuel T. Tisdale¹⁰. A total of 30,660 brook trout, “St. Croix land-locked salmon”, Atlantic salmon, lake trout, whitefish, and char were hatched there between Nov. 1868 and May 1870¹⁰.

—Disgusted with the belief that “...our inland fisheries with the hook-and-line now amount to practically *nothing*”, the Commissioners recommended that great ponds and minor tidal streams be controlled by the riparian proprietors, *so far as concerns the taking of certain cultivable fishes* [italics in original].

—The State Legislature enacted a landmark piece of legislation in June 1869¹¹, comprising 34 sections, which included: (1) compilation of all the fish passage laws together as the “laws on inland fisheries”; (2) increasing the Board of Commissioners from two to three members, with 5-year terms; (3) providing that the Commissioners may, personally or by deputy, may enforce all fisheries laws, require an owner to construct a fishway, where absent, or construct one at the owner's expense, take fish in any manner at any time for scientific or propagation purposes, pass over or through private property without liability for trespass, and lease ponds <20 acres for propagation; (4) providing riparian property owners exclusive control of most ponds <20 acres; (5) providing that most ponds >20 acres shall be public, and that the public shall be allowed reasonable access for fishing; (6) providing for fines and a statute of limitations; and (7) making several changes in allowable fishing methodology, sale of freshwater fish, and open seasons for salmon, landlocked salmon, shad, black bass, smelt, and white perch.

1869¹²: Edward Augustus Brackett¹³ (1818-1908), a portrait artist, sculptor, author, and fish enthusiast, was appointed in 1869 as the third Fish Commissioner (Table 1).

—The Commissioners' report summarized the above legislation¹¹; remarked on the issues with the Holyoke Water Power Company; discussed the culture of alewives, shad, smelt, salmon, and trout; and commented on the stocking of ponds and the Concord River with black bass.

“SUCCESSFUL CULTIVATION OF FISH¹ IS NO LONGER A MATTER OF DOUBT”²: THE 1870s

The decade saw several significant events³ on the national scene, including the Great Chicago Fire (1871), the deadly Peshtigo forest fire in Wisconsin (on the same day in 1871 as the Chicago Fire), the gradual opening of the Brooklyn Bridge (1872-83), the “Panic of 1873” financial crisis (1873-79), the Battle of the Little Bighorn (1876), the Centennial Exposition (1876), the bitter and contested Hayes-Tilden presidential

election (1876), and the first public telephones (1877). In Massachusetts, the Great Boston Fire of November 1872 destroyed 776 buildings and killed ≥ 30 people. The opening of the Hoosac Tunnel in 1873 facilitated the Commonwealth's path to commerce by rail with the west.

Many notable events in the environmental field took place in the 1870s. The American Fish Culturists' Association was formed in December 1870, later changing their name to "American Fish-Cultural Association" in 1878, and to "The American Fisheries Society" in 1886^{4,5}. In 1871, the U.S. Congress authorized creation of the U.S. Commission on Fish and Fisheries⁴, with one of its initial tasks that of introducing or restoring salmon and shad, especially in federal waters. That same year, the naturalist and essayist John Burroughs (1837-1921) published his first work, *Wake-Robin*, "...a careful and conscientious record of his actual observations and experiences"⁶. The first National Park—Yellowstone—was established by Congress in 1872^{7,8}. Charles Hallock (1834-1917) founded the pioneering outdoor magazine *Forest and Stream* in 1873. Subsequently edited for 35 years by the anthropologist and ornithologist George Bird Grinnell (1849-1938), the magazine dedicated itself to wildlife conservation, helped establish the National Audubon Society, and was a strong advocate and sponsor of the National Park movement⁹. The same year, William Brewster (1851-1919) founded the Nuttall Ornithological Club¹⁰, the first organization in the U.S.A. devoted to ornithology.

In the northern Great Plains, the U.S. Army sent an exploring and scouting party under the command of George Armstrong Custer (1839-1876) into the Black Hills in July-August 1874, accompanied by a photographer and a young G.B. Grinnell. The photographs taken at that time, when compared with present-day ones at the exact same sites, provided a unique window into forest ecology and changes in a forest ecosystem over a 100-year span¹¹.

In Massachusetts, the Massachusetts Anglers' Association (adding "game" to its name 3 years later) was incorporated¹² in 1873, giving a rebuttal to the Fish Commissioners' allegations that hook-and-line fishing amounted to "practically nothing".

1870¹³: Field left the Commission and was replaced by Thomas Talbot. The Commissioners' report stated that the case against the Holyoke Water Power Company had been decided in favor of the Commonwealth¹⁴ and the case had been appealed to the U.S. Supreme Court.

—Fish culture continued at Maple Springs until Tisdale's death early in 1870. Stocking of black bass continued.

—Seven great ponds in Dukes, Essex, Middlesex, Norfolk, and Worcester counties were leased to individuals for fish culture for 5 to 20 years, most for \$1.00 annually.

—Legislation¹⁵ provided for restrictions on seasons, dates, bag limits, and methods of take for various birds, birds' eggs, and deer.

1871¹⁶: The Commissioners had little to comment on, summarizing the state of their initial charges in 1866 and setting forth hopes for the future. Fishways were constructed on the Ipswich, Indian Head, and Neponset Rivers.

—Shad hatching continued at North Andover, where there were 4336 [wild] fish taken and 4.53 million spawn hatched. A portion of the shad stocked in Whitney's Pond returned in the spring (1871) over the fishway at Mystic River.



Photo © MassWildlife

Figure 10. Winchester Fish Hatchery, early 1900s.

—A new statute¹⁷ prohibited the taking of black bass in Lake Cochituate.

1872¹⁸: The Commissioners reported that alewives were “rapidly increasing” and there was an increased number of shad over the Lawrence fishway. Shad hatching at Holyoke continued under the auspices of Seth Green.

—Last spring (1872) “almost every fish dealer in Boston” had young salmon weighing 2-3 pounds, caught in weirs and nets on both sides of Cape Cod. These were undoubtedly fish hatched by the state and put into the headwaters of “our” rivers. The Commissioners obtained (in 1870) a small [hatching] house (built 1867) on the land of B.F. Ham in Winchester (Figure 10) for hatching salmon, which was enlarged to the capacity of 1 million spawn. The Commissioners recommended that they be given control of a small stream and pond for the purpose of keeping breeding fish. The entry of Maine into the restoration program in 1871 generated stability for it, with the cooperation of many individuals¹⁹.

—[Private] establishments for trout breeding were “springing up” all over the state.

1873²⁰: The 1873 Annual Report contained the exciting news that the U.S. Supreme Court decided in favor of the Commonwealth in its suit against the Holyoke Water Power Company²¹, concluding (in part) that: “Properly construed, neither of the charters affords any support whatever to the theory of the respondents, as they do not contain any semblance of a grant to take and subvert the fish rights below the dam”. The Holyoke fishway was then constructed but failed to pass shad. Fifteen of 18 other fishways ordered during the previous year were constructed.

—Salmon continued to be hatched at the Winchester hatch-house. Propagation of landlocked salmon was contemplated. Shad hatching continued at North Andover, and spawn were distributed to four rivers.

—Since 1869, 26 great ponds in eight counties were leased for the cultivation of useful fishes (most stocked with trout or bass), for 5-20 years, including four to town inhabitants collectively, and one (Lake Chauncey) to the “Trustees Reform School”.

—Legislation²² prohibited the catching of smelt statewide by any means except hook and line, except in five locations in Barnstable, Bristol, and Dukes counties.

1874²³: The Commissioners stated that the fishway at Holyoke had been completed in the fall and that the Commissioners of the four affected states (CT, MA, NH, VT) later met at Turners Falls to examine the [new] dam there and to make an assessment as to the best site for a fishway. However, the Turners Falls Company was uncooperative.

—Salmon spawn reared in Maine and hatched at Winchester produced 271,000 fry which were released in the Connecticut and Westfield Rivers. Between 1866-1876, before any adult salmon had returned, nearly 1.3 million fry were released in the Merrimack and the fishways were in excellent condition¹⁹. Shad continued to be hatched at North Andover and South Hadley.

—Landlocked salmon spawn were released in five ponds and one river in Berkshire, Middlesex, and Worcester counties.

—Legislation²⁴ provided that the trout, landlocked salmon, and lake trout seasons were closed between August 20 to the following March 20, and that nets or salmon pots were prohibited at any season.

1875²⁵: The Commissioners reported that they had found the best type of fishway for all types of fish collectively, but were still searching for a design which would be best suited to shad.

—Shad hatching continued on the Merrimack and Connecticut. Landlocked salmon fry were stocked in four towns in four counties.

—There is a “...general and healthy growth of public interest in pisciculture, not here alone but in the whole country.”

—Fifty-four [great] ponds were now under private lease.

1876²⁶: The Commissioners reported on the status of improvements to the Holyoke and Lawrence dams.

—The shad catch on the lower Connecticut was one of the best ever; however, this left few fish for spawning. Shad hatching at North Andover was discontinued in 1876 with the probable result of a falling off in subsequent fisheries.

—About 195,000 landlocked salmon fry were raised and distributed to 24 Massachusetts ponds.

—Black bass were plentiful in the upper part of the Connecticut and were increasing in the Merrimack.

1877²⁷: There were 47 [adult] salmon (weighing 6-20 lbs.) counted at the Lawrence fishway^{18,27} (May-July), causing the Commissioners to estimate the actual passage of 1128²⁸ fish.

—The Commissioners lamented a decline in shad on the Merrimack, but congratulated detectives for apprehending poachers (including 2 North Andover town officials).

—On the Connecticut River, 10-15,000 shad were taken for spawning in 1873 but only 2674 in 1877.

—Thirty ponds were stocked with about 150,000 landlocked salmon fry.

—Legislation²⁹ revised an 1870 law and provided for further restrictions on the taking of birds, birds' eggs, deer, and other game.

1878³⁰: The Commissioners presented a substantial report of the tally of fish over the Lawrence fishway from April 22 until August 25, which included 17 salmon and 5 shad.

—The shad run on the Connecticut was “extremely bad” in 1877 and the Commissioners met with Connecticut authorities in regard to exploitive capture methods (e.g., fish pounds).

—The Commissioners also stated that the Westfield River had been opened as far as Westfield, where four dams still lacked fishways.

—There were 245,000 landlocked salmon stocked in 29 ponds, including Halfway Pond in Plymouth, where they are well established.

—Legislation³¹ prohibited keeping, killing, or shooting at any pigeon or other bird as a game or test of marksmanship or renting or allowing the use of any premises for such purpose.

1878-79³²: The Commissioners' report continued a tally of fish passing the Lawrence Dam, including 28 salmon and 2 shad between May 5 and October 1, 1879.

—Twenty-eight ponds were stocked with 224,763 landlocked salmon fry.

1879-80³³: There was a large run of salmon in the Merrimack in 1880 but few reached the spawning grounds due to drought and illegal night fishing by poachers. There were 23 salmon and no shad over the Lawrence fishway between April 26 and August 10.

—The Commissioners remarked that their duties now included the collection of statistics on shore and river net-fisheries³⁴, which will be set forth in their Annual Reports.

—Landlocked salmon were probably established in several ponds; 21 ponds received fry in 1880.

—Trout were primarily propagated by private entrepreneurs; about 100,000 small fish received from New Hampshire (a joint hatchery in Plymouth) will be distributed to [private] applicants at Winchester in April 1881.

—The Commissioners received 1300 carp from the U.S. Fish Commissioner in Washington, of which 400 were held at the Tewksbury Reservoir and the remainder distributed to 33 Massachusetts cooperators, three in Maine, and three in New Hampshire.

“THE PROTECTION AND PRESERVATION OF BIRDS AND MAMMALS
IN LIKE MANNER AS TO FISH”: THE 1880s

Nationally, the 1880s saw the invention of the electric light (1880), the assassination of President James Abram Garfield (1881) and the perfection of the Kodak camera (1888)¹. Massachusetts saw advances in primary and secondary education, including technical schools, increases in free public schools, and the inception of a common course of study; civil service reform; and advances in public health². The Great Blizzard of March 1888 virtually halted transportation and commerce in the Northeast for weeks. In the U.S., land clearing was down to 28,603,000 acres in 1880-89 against 62,000 for the Northeast region³, but would nearly triple in the Northeast by 1900-09 with the harvesting of successional old-field white pine⁴.

The diversity of sportsmen, naturalists, foresters, scientists, bird watchers, and educators who decried the wanton exploitation of fish, forests, and wildlife began to coalesce—if not always in actual partnership, at least in a common goal—around a framework of natural resource conservation^{5,6}. Carl Christian Schurz (1829-1906), appointed as Secretary of the Interior by President Rutherford Birchard Hayes (1822-1893), fostered conservation issues in the Interior Department and advocated the creation of forest reserves⁵.

The American Ornithologists' Union [AOU] (modeled on the British Ornithologists' Union), was established in 1883 and incorporated in Washington, D.C. in 1888⁷. Its journal—*The Auk*—was hatched, phoenix-like, from the *Bulletin* of the Massachusetts-based Nuttall Ornithological Club in 1884. The sportsman George Bird Grinnell (a charter member of the AOU) partnered with that organization by fiercely promoting bird protection in *Forest and Stream*.

Charles Sprague Sargent (1841-1927), botanist and director of Harvard University's Arnold Arboretum, criticized “...our present reckless methods of forest management...the pine which once covered New England and New York has already disappeared...[in] the Atlantic region the hardwood forests...have everywhere lost their best timber”⁸.

Game mammals also drew attention. Clinton Hart Merriam M.D. (1855-1942) was appointed Director of the newly-formed Office of Economic Ornithology and Mammalogy of the U.S. Department of Agriculture in 1884^{5,6}. Despite his peculiar taxonomic predilections, Merriam actively fostered cooperation between scientists and academia and encouraged a proliferation of mammal specialists, leading to changes in state and federal practice and policy and the birth of game management as a science⁶. Soon thereafter, New York Assemblyman Theodore Roosevelt (1858-1919) proposed the formation of a club of hunting riflemen. Enthusiastically received among the sporting elite, the club—now named the “Boone and Crockett Club”—was organized in January 1888 with Roosevelt as President⁹. Among the club's principal objectives was the preservation of large game animals and the enactment and enforcement of legislation for that purpose.

The period from 1860-1880 was the nadir for black bears in Massachusetts¹⁰ with the animals restricted to a small enclave in northern Berkshire County¹¹. After 1880, a few dispersers showed up elsewhere in the state but bears were nonetheless practically extirpated. With white-tailed deer rapidly declining (“a few still exist”¹²),

hunters mostly focused on small game, including rabbits, squirrels, and raccoons¹³, snowshoe hare¹⁴, and waterfowl.

1880-81¹⁵: The Commissioners surveyed and provided plans for several dams. Lampreys were being taken illegally at the Holyoke fishway and several violators were apprehended.

—At the Lawrence Fishway, 72¹⁶ salmon and four shad were observed between May 8 and September 15. Illegal seining on the Merrimack below the Newburyport chain bridge took many salmon and shad. The drought continued upriver and salmon could not easily reach the spawning grounds. Salmon were reestablished in the [lower] Merrimack and “have a fair chance”.

—Limited numbers of [brook] trout fry (23 cans) were hatched at Winchester and distributed to private propagators. Eighty cans of landlocked salmon fry were stocked or distributed to private individuals.

—Pond leases continued, although progress reports were slow to come in.

1881-82¹⁷: The state’s fishways were “generally in good working order” and a few new ones were completed or in progress. Between May 5 and September 30, there were only 25 salmon¹⁸ and two shad counted at the Lawrence fishway.

—Shad hatching was reinstituted at North Andover, but with a delayed start. There were 654 adults taken from the Merrimack, producing about 1 million spawn, of which 40,000 were released above the Lawrence Dam and 800,000 at North Andover. Seiners on the lower Merrimack continued to take fish illegally.

—Landlocked salmon continued to be hatched and stocked, with 29 cans distributed. Fifteen cans of brook trout fry were hatched from last year’s spawn and distributed to propagators. Both rainbow trout and “Lake Superior or salmon trout” may be available next year.

—The carp stocking of 1880 was unsuccessful due to a low initial stocking and poor habitat selection. Further attempts were deemed to be desirable.

1883¹⁹: The Commissioners discussed construction issues with the Pawtucket Dam at Lowell. The salmon tally at the Lawrence fishway was only 12²⁰ fish (and no shad), one of the poorest years of the restoration effort.

—Shad hatching continued at North Andover with about 1.25 million hatched from 428 adults taken. The hatchlings were released above the Lawrence Dam, at North Andover, and in the Ipswich River.

—Twenty-five cans of brook trout fry were distributed to 17 propagators, with an increase projected for the following year. Lake trout (26 cans) from Wisconsin were hatched and distributed to 19 propagators. Rainbow trout propagation was delayed. Landlocked salmon (52 cans) were distributed to 16 cooperators and stocked in one river.

—The U.S. Fish Commissioner provided 4000 carp to Massachusetts in November, of which half were stocked and the remainder held at the Winchester hatchery.

—Pond and stream management improved slightly but could be bettered. All statutes pertaining to fish were compiled into a Chapter of the Public Statutes²¹.

1884²²: The Commissioners advised that the salmon run on the Merrimack was about six times larger than in 1883, but that only 17²³ were passed at Lawrence from May 6 to June 24 and September 24-October 22.

—There were only 166 adult shad captured at North Andover and the hatch produced 252,000 young which were returned to the Merrimack River.

—Twenty-four cans of [brook] trout fry from Winchester were delivered to 17 cooperators, as well as 25 cans of lake trout (to 14 cooperators), and 56 cans of landlocked salmon fry (to 18 cooperators and stocked in one pond).

—Four thousand carp were received from the federal government and delivered to 30 cooperators.

—Reports from leased ponds showed a large increase in fish. Seven of 114 ponds gave a total return of 237,817 fish caught; an overall total estimate was 400,000 fish.

1885²⁴: This year saw 17 salmon (an estimated 750 total²⁵) and five shad passed through the Lawrence fishway, “by far” the largest yet.

—Shad hatching on the Merrimack produced good results; 704 shad were taken with 490 returned alive to the river and 214 distributed. The hatch was ≈500,000 with all released to the Merrimack in New Hampshire and Massachusetts. Shad protection on the Atlantic coast appeared to be dependent on artificial propagation. Adverse conditions, including pollution and the use of exploitive pound nets, apparently limited natural reproduction.

—Carp stocking continued with 2000 young carp distributed to 28 cooperators and one reservoir. Carp cultivation²⁶ was deemed to be a valuable endeavor which should be promoted.

—Forty-six cans of trout fry (to 24 recipients) and 61 cans of landlocked salmon (to 15 recipients) were distributed (most transported at no charge by the railroads).

—Leased ponds showed mixed results. Onota Lake in Pittsfield was found to be properly managed and it produced 6730 pounds of fish, including 1500 of black bass and 1000 of pickerel.

1886²⁷: Another landmark change occurred when, on June 10, 1886, the Commissioners were given authority over all game laws and became the “Commissioners on Inland Fisheries and Game”²⁸.

—In addition to this transfer of authority, the Act: (1) set or changed the open seasons for heath hen, ruffed grouse, woodcock, wood duck, black duck, teal, snipe, plovers and other shorebirds, passenger pigeons, gulls and terns; (2) prohibited selling of or possessing for sale most of these birds; (3) prohibited killing or taking or disturbing the nest and eggs of birds other than English sparrows, grackles, crows, jays, birds of prey, wild geese and fowl other than above; (4) provided for scientific collecting permits; (5) established restricted open seasons for gray squirrel, hare, and rabbit; (6) prohibited ferreting, jacklighting, swivel and punt guns, and pursuing wild fowl from a powered craft; and (7) established provisions for deputies, enforcement powers, and fines.

—At the Lawrence fishway, 14 salmon and no shad were passed. The spring run of salmon was smaller—but the fall run larger—than usual.

—Shad hatching at North Andover continued with 1674 shad taken from the Merrimack (205 were retained for spawning) and about 600,000 young shad hatched.

—The Commissioners again received brook trout eggs from New Hampshire and hatched and distributed 261,500 fry to 49 recipients. Sixteen recipients distributed 100,500 landlocked salmon fry. Nine recipients obtained 1600 young carp, of which 400 were placed in the Tewksbury Reservoir.

—The Massachusetts Legislature formally complained to the State of Connecticut regarding the Enfield Dam on the Connecticut River.

1887²⁹: The Commissioners began formally reporting on both “fisheries” and “game”. All fishways in the state were found to be in good condition, except the one at Middleborough. Normal rainfall resumed and the Merrimack River ran full for the first time in seven years. There were 67³⁰ salmon (1 shad) counted at the Lawrence fishway. The river was opened to hook-and-line fishing.

—An attempt at shad hatching on the Taunton River was a failure. At North Andover, 1753 shad were taken (1537 returned), yielding about 1.2 million hatched. Most (n=950,000) were stocked into the Merrimack; the remainder went to New Hampshire and to two private individuals. Shad harvest on the Merrimack was nearly eradicated due to the use of small-mesh seines, which had been prohibited in 1884.

—Trout were hatched at Winchester and distributed to 60 individuals. Landlocked salmon spawn was much less than previous years and fry distributed to 16 individuals. Carp production continued and the fish were distributed to 19 individuals.

—English sparrows were a nuisance³¹ and the Commissioners recommended killing them at all seasons as “...they are good for the table and that alone”³².

—The Commissioners further advised that “The horned and hooped wild game is nearly gone from Massachusetts. A few wild-eyed and apprehensive deer haunt the pine woods of the Cape...”. The public was reminded that “The holder of the land does not own the game, but he has the right while it remains on his land to its first pursuit, or to permit or debar the public from its pursuit if he desires”.

1888³³: The decrepit Middleborough fishway was replaced with a new and more expensive one. The salmon run at Lawrence was again strong, with 92³⁴ (no shad) taken at the fishway. A number of salmon were taken illegally in the lower Merrimack.

—A decreased number of shad (n=721) were taken at North Andover and 1.010 million hatched. Most (n=490,000) were stocked into the Merrimack, 430,000 were given to New Hampshire for stocking, and the remainder to two cooperators. The shad fisheries in the Connecticut River have been “destroyed by the cupidity of the [commercial] fishermen.”³⁵, declining from a catch of 436,981 in 1879 to 68,450 in 1888.

—Trout were again hatched at Winchester and fry were distributed to 66 cooperators. Landlocked salmon fry were distributed to 13 cooperators. Six cooperators received only 50-60 carp each, even though there was an ample supply.

—Deer were being killed illegally on Cape Cod and legislation regarding game protection was “capricious and largely unwise”. The Commissioners recommended that the open season for woodcock, quail, and partridge should be limited to October through December. The public is “...in favor of the protection of our song and insectivorous birds”.

1889³⁶: The Commissioners reported that 59 salmon³⁷ (no shad) were reported at the Lawrence fishway, a substantially less run than in the previous two years. The commercial shad harvest on the Connecticut River continued to decline, reaching only 42,325, the lowest on record. Illegal harvest of shad on the lower Merrimack was also occurring under the pretext of taking bait fish.

—Shad hatching at North Andover continued with only 98 shad taken and 625,000 hatched. Of these, 240,000 were stocked in the Merrimack, 320,000 to New Hampshire for stocking, and the remainder given to two cooperators.

—Trout fry were distributed to 62 cooperators and carp to 10 cooperators.

—The Commissioners stated that a non-export law was needed to protect grouse and quail from market hunters who kill game for the New York market. Uniform woodcock, grouse, and quail seasons were also needed. Shooting, hunting, and fishing on Sunday is a nuisance and Sunday is the peak day for illegal activity.

WILKINSONVILLE TROUT AND MONGOLIAN PHEASANT: THE 1890s

In the U.S.A., the “Mauve Decade” was characterized by the violent confrontation at Wounded Knee in South Dakota, resulting in a functional end to the Indian Wars (1890), the demonstration of the first commercial gasoline-powered automobile—the Duryea—in Chicopee (Mass.)(1893), the Panic of 1893 and the ensuing economic depression, the Klondike Gold Rush (1896-99), and the Spanish-American War (1898)¹. Massachusetts saw changes in the banking, insurance, textile, shoemaking, confectionery, and transportation industries², as those businesses increasingly became affected by the advent of steam and electric machinery and foreign and southern competition. The newspapers also underwent a revolution in editing and publishing, stimulated by a large increase in advertising³. The first subway system in the United States was constructed in Boston in 1897.

Changes in forest utilization and agricultural patterns continued much as they had in the 1880s. Massachusetts was in a period of forest “devastation”⁴, driven by a decline in agriculture and the exploitation of second growth woodlands. The great “Portland Gale” of November 1898 killed >400 people and sank >150 vessels.

The environmental conservation and protection movement continued to evolve. In Massachusetts, the landscape architect Charles Eliot (1859-1897), writing in *Garden and Forest* in March 1890, advocated the establishment of a private non-profit entity to conserve areas of scenic beauty⁵. Soon thereafter, the Trustees of [Public] Reservations was incorporated⁶ to acquire, hold, maintain and provide access to beautiful and scenic areas within the Commonwealth. Also in 1890, the naturalist and author John Muir (1838-1914) formed the Sierra Club to protect and set aside spectacular scenic areas^{7,8}.

Merriam’s Division of Economic Ornithology and Mammalogy was renamed the Division of Biological Survey in 1895, addressing illegal market hunting and developing census and survey techniques and applied ecological research^{7,8}. The same year, the New York Zoological Survey (now the Wildlife Conservation Society) was organized with

the assistance of the lawyer and sportsman Madison Grant (1865-1937) and the Boone and Crockett Club⁹.

Then, alarmed by the killing of egrets and other birds to acquire plume feathers for ladies' hats, Harriet Lawrence Hemenway (1858-1960) and Minna B. Hall (1851-1944) organized a coalition which led to the formation of the Massachusetts Audubon Society¹⁰ in 1896—the first such entity in the United States. The same year, in ruling on a Connecticut case involving interstate transport of game birds, the U.S. Supreme Court found for the defendant, establishing a long-standing doctrine of state “ownership” of wildlife¹¹.

Freshwater angling continued to be popular in Massachusetts. Brook trout continued in popularity^{12,13, 14} but bass, pickerel, perch, and bullheads did not lack interest, especially among youths (Figure 11). Frank Amasa Bates (1858-1915), fishing in South Carver, claimed that “...hornpout are the most intelligent fish that ever grew...I druther have them than perch, and it's just as much fun to ketch 'em”¹⁵.



Photo © MassWildlife

Figure 11. Youth with a pickerel taken in Little Long Pond, Rochester.

Rabbits, hare, and upland game birds^{12,14} continued in favor with hunters as did red fox^{16,17}. Fifty pairs of “rabbits” (from out-of-state?) were released on Nantucket in 1891¹⁸ to the delight of houndsmen.

The abundance of waterfowl and shorebirds along the coast—although rapidly diminishing¹⁹—were a strong draw along the coast in Barnstable²⁰, Essex²¹, Nantucket²², Plymouth²³, and Suffolk²⁴ counties. Russell Scudder Nye (1861-1930) of Falmouth praised “...the black duck or black mallard...[which] is the hardest to circumvent and bring to bay...”²⁵. On the other hand, President Stephen Grover Cleveland (1837-1908)—a frequent Cape Cod waterfowler—lauded the “serene duck hunters” who associated for “high aims and purposes”²⁶.

1890²⁷: The Commissioners stated that eight new fishways were built on the Monaquot River in Norfolk County. Fish passage at the Lawrence Dam from April 22 to October 9 yielded 44 salmon²⁸, believed to be the second largest run of adults to enter the Merrimack.

—Shad continued to decline on the Merrimack, with none passed or caught in seines at Newburyport. However, many were taken at the mouth of the Merrimack. The scarcity of fish greatly affected shad hatching at North Andover. Only 62 were taken, with about 170,000 young hatched.

—The trout harvest during 1890 was “unusually large” mainly due to the stocking of young trout. The demand for trout was great and the Commissioners could not keep up with requests, with 132 cooperating applicants receiving about 3500 fry each. The

Legislature appropriated \$1000²⁹ to establish another hatchery. The private hatchery of the Hampshire Trout Breeding Association received 25,000 brook trout eggs from Michigan and 35,000 from the Commissioners. About 5500 fry were later stocked in Hampshire County and about 275 yearling carp were distributed to 11 cooperators.

—The open seasons on trout, landlocked salmon, and lake trout in the four western counties of the state were increased³⁰.

—Game birds seemed to be increasing and private enterprise was demonstrating that “...some of the best game birds of Europe can be successfully introduced and bred here...”. English sparrows continued as a pest and a bounty law was recommended.

1891³¹: Sixty-seven salmon³² were tallied between April and September at the Lawrence fishway, although there was a lessened run overall due to low water. Illegal fishing continued to be a major problem.

—There were more applicants requesting brook trout than could be satisfied by existing production at Winchester and the private hatchery at Northampton. About 580,000 fry were distributed to 158 applicants. The new state hatchery at Sutton was under construction (it opened in 1891) on two acres of leased land for 10 years at \$25 annually. Interest in carp was low and only five applicants requested and received fish.

—The Commissioners met with their counterparts from other New England states in response to a [Mass.] Senate Resolve³³ relating to the adoption of uniform laws protecting food fishes in New England. The consensus was that such uniform laws were impractical, but that an annual meeting was desirable.

—“Vermin like foxes, skunks, weasels, and red squirrels are an important factor in reducing our game supply” and a bounty law would be a wise measure. The ruffed grouse showed an “...almost unaccountable scarcity”.

—Deputies continued to enforce the fish and game laws, despite limitations on personnel and authority. Fines for illegal taking of woodcock, grouse, quail and ducks were set³⁴ and the evidentiary rules for violations were strengthened³⁵.

1892³⁶: There were 84 salmon³⁷ passed through the Lawrence Fishway, overall comprising the greatest run since the inception of the program³⁷. However, low water and obstructions prevented salmon from reaching the spawning grounds above Concord [N.H.].

—The shad harvest on the Connecticut River was depleted to 2056 taken in fresh water rivers, the lowest in 11 years.

—About 510,000 trout fry were sent to 136 applicants and 20,000 were sent to the new Wilkinsonville (i.e., Sutton) hatchery—nearly completed—for rearing as breeders.

—The Commissioners again urged the implementation of a bounty law.

1893³⁸: The Commissioners discussed the repairs to fishways in Taunton and Middleborough. At the Lawrence fishway, 97³⁹ salmon were passed, another exceptionally large run. However, salmon continued to be blocked from passage beyond Concord [N.H.] due to dams, and thus could not reach the spawning areas for the second year^{38,39}.

—The Sutton hatchery was nearly completed and had received some breeding stock. However, more rearing ponds needed to be constructed and the number of breeders



Photo © Mass Wildlife

Figure 12. Sutton State Fish Hatchery buildings, about 1910.

increased to 15,000. A second hatchery in the western part of the state was desirable. Massachusetts now has one hatchery (i.e., Sutton) , a half-interest in a second (Plymouth, N.H.), and a cooperative agreement in Winchester.

—Eighty-one applicants received ≈ 3500 [brook trout] fry each. The consensus was that stocking fry instead of fingerlings in brooks was the most cost-effective procedure. About 40,000 lake trout were hatched and stocked in two ponds on Cape Cod. There was an interest in white perch and retaining ponds for their culture were being prepared. Only five applications for carp were received and each applicant received 50 carp.

—Low pelt prices diminished the number of trappers seeking predatory animals. A bounty law was needed, similar to the county-enacted bounties for the taking of seals.

—The practicality of importing grouse and pheasants from Europe for stocking in Massachusetts should be explored.

—The Commissioners and their deputies were authorized to arrest without warrant any person found in violation of the fish and game laws in the field⁴⁰.

1894⁴¹: There were only 11 salmon⁴² passed at the Lawrence fishway, an unusually small run compared to 1892-93⁴². The Massachusetts Legislature passed—and the Governor vetoed—a statute removing all restrictions in fishing in the lower

Merrimack. However, even if passed, this would not affect salmon restoration since the dams near Concord [N.H.] blocked access to the spawning areas⁴².

—There was continued discussion on the stocking of fingerling trout (vs. fry). About 350,000 brook trout fry were distributed to 71 applicants and to the Sutton hatchery. The Sutton hatchery (Figure 12) was completed and will be in operation in the coming year.

—Lake trout fry were hatched and liberated in 11 ponds. Ten applicants were provided with 50-60 white perch each (live-captured and held in ponds for distribution) and four cooperators received carp.

—Woodcock and ruffed grouse were scarce, but quail were increasing. The Commissioners recommended that the open season for all upland game run for two months, from October 1 to December 1. The seasons for gray squirrel, rabbit, and hare were closed between March 1 and September 15⁴³, the quail season was closed in 1894⁴⁴, and provisions were made for the sale of game birds taken out of state, or during the open season in Massachusetts⁴⁵.

—An order for 1200 Chinese ring-necked pheasants was placed but all died between Gibraltar and New York. A setting of English pheasant⁴⁶ eggs and a few Mongolian birds were received from private individuals.

1895⁴⁷: The Lawrence fishway was damaged by a spring freshet and was only operable part-time. Twenty-five salmon were passed between June 28 and July 24, and 31 in October⁴⁸, with a considerably larger run than in 1894. However, since the salmon could not migrate beyond the Sewall's Falls Dam at Concord (N.H.), many moved into lower tributaries and were illegally taken⁴⁸. The Massachusetts Legislature repealed⁴⁹ the statutes protecting shad and alewives in the lower Merrimack River, over the objections of the Commissioners and the Governor.

—About 375,000 brook trout fry were distributed to 68 applicants, 100,000 lake trout fry to 14 applicants, and >50 carp each to 10 applicants. White perch were not distributed due to lack of funds.

—The Sutton hatchery was renovated and a new superintendent appointed. The Winchester hatchery must either be rebuilt or abandoned. The joint tenancy of the hatchery at Plymouth, N.H. was ended⁵⁰.

—Quail and ruffed grouse were plentiful, both from increased protection and from favorable climatic conditions.

—Previous experiments in raising English pheasants were unsuccessful. The Legislature appropriated funds⁵¹ for the acquisition of Mongolian pheasants⁵² and in April 1895 three male and nine females were received from Oregon⁴¹ and sent to the Winchester hatchery. By the fall of 1895, the birds had produced 70-80 chicks.

—Public opinion was ahead of legislative enactments: "Land without game or bird life, and water without fish, are a desolation and destruction of the balance of nature"⁴¹.

1896⁵³: The Lawrence fishway was determined to be heavily damaged by spring floods. The Legislature failed to appropriate monies to repair and rebuild it. There was no formal tally of salmon; 10 fish were hand-netted and moved above the dam. The run reaching (but not passing) the dam was estimated at ≈1000 fish, which was the last major run on the Merrimack⁵⁴.

—Between 500-600,000 brook trout fry were hatched and distributed to 60 applicants. Nearly 1200 carp of various ages were distributed. However, due to low demand, the breeding ponds at Tewksbury were discontinued and carp taken from a flowed meadow in the Middlesex Fells.

—The Sutton hatchery was in good order and the Legislature appropriated funds for a second hatchery at East Hadley⁵⁵ (built 1896). The Winchester hatchery must either be rebuilt or abandoned.

—The propagation of Mongolian pheasants was going well; >200 chicks were moved to a covered pen. A few birds were distributed to private propagators and 12 birds which were released in Dalton in 1895 bred and produced chicks. Escaped birds also bred in Winchester.

—Deer “...are coming into the state in considerable numbers...”. Since there is an open season during the month of November (except on Cape Cod); the season should be entirely closed for a period of years.

—The taking, sale or possession of black bass <8 inches in length was prohibited⁵⁶.

—The Commissioners recommended that the Legislature prohibit snaring and that the laws protecting songbirds be enforced. The Commissioners urged a system of paid deputies, at least one per county⁵³ (see 1898-99 below).

1897⁵⁷: The Lawrence fishway was inoperable. Funds were appropriated for repairs⁵⁸; however, this was not accomplished prior to the 1897 season. An estimated 250 salmon returned to the area below the dam⁵⁹.

—The Sutton hatchery and the Hadley hatchery needed improvements to the ponds. Monies were appropriated to rebuild the Winchester hatchery⁶⁰ on a site in the Middlesex Fells. It was sufficiently complete so as to receive eggs by the end of December 1897. The Commissioners hired their first Superintendent of Hatcheries, John W. Delano⁵⁷ (a former Commissioner).

—The Legislature also provided funds for stocking great ponds with food fish⁶¹ and 11 ponds were stocked with white perch⁵⁷. Brook trout fry were distributed to 39 applicants from the Winchester hatchery, 26 from Sutton, and 16 from Hadley.

—The rearing and distribution of Mongolian pheasants was “fairly successful”. Incubators were acquired for use as an alternate to brood hens. Nine pairs and a few extra cocks were liberated in Winchester and some broods observed.

—Legislation⁶² prohibited the sale or possession of the feathers or bodies of protected birds; however, it applied only to those provably taken within Massachusetts.

—The Commissioners recommended that the ferreting law be amended to prohibit possession of a ferret in the field. A closed season on white-tailed deer for “a term of years” was also desirable.

1898⁶³: The Legislature provided funds⁶⁴ for a fourth hatchery, to be situated in Berkshire County. The Commissioners chose a site in Adams, with a supply of “pure spring water”. The renovated Winchester hatchery was opened part-time to the public in view of its physical attractiveness and the general interest in fish propagation.

—The Lawrence fishway was rebuilt on the opposite side of the river. However, no salmon were passed, and only a “handful” appeared at the base of the dam⁶⁵. This was

the end of a “dramatic effort” to restore salmon to a river from which the historical runs had been eradicated⁶⁵.

—Brook trout were distributed to 41 applicants from the Winchester hatchery, to 37 from Sutton, and to 28 from Hadley. Lake trout fry raised from Michigan eggs were stocked in seven lakes and ponds, and fry raised from Maine eggs were stocked in Quacumquasit Pond. White perch were released in 15 ponds.

—The propagation of Mongolian pheasants was quite successful, due to the assistance of skilled cooperators. Broods were reported in Worcester County and near Winchester pheasants are “...more plentiful than ruffed grouse”.

—Legislation was passed prohibiting possession of a ferret in the field⁶⁶, closing the deer season statewide⁶⁷ until November 1, 1903, and amending the law pertaining to sale of bird feathers or carcasses to include those taken outside Massachusetts⁶⁸. Deputies (i.e., enforcement officers) were now to be paid from accrued fines and forfeitures^{63,69}.

1899⁷⁰: Brook trout were distributed from the Adams hatchery (in May) to 21 applicants, from Hadley to 27 applicants, from Sutton to 30 applicants, and from Winchester to 42 applicants. Lake Quinsigamond was stocked with 225 two-year-old rainbow trout and 75 three-to-four-year-old brook trout. No carp were requested, yet carp were selling at 18-25¢ per pound in Boston. A total of 2800 white perch were stocked in six ponds and lakes.

—The Commissioners continued to urge that the open season for all game should be only from October 1 to December 1. Pheasants were doing well in the towns near Winchester.

—The Commissioners were given control of Mill Pond in Yarmouth for the cultivation of food fish⁷¹.

—Sunday hunting was prohibited under the game laws⁷² (i.e., exclusive of the so-called “Blue Laws”). The Act relative to paid deputies was amended⁷³ to clarify its intent and facilitate payments to officers.

“ARTIFICIAL PROPAGATION AND PROTECTION OF NATIVE VARIETIES IS MORE ESSENTIAL THAN INTRODUCTION OF NEW VARIETIES”: THE 1900s

In the U.S.A., the 1900s saw the Philippine War (1899-1902), the assassination of President William McKinley (1843-1901), formal U.S. control of the Panama canal zone (1902), the settlement of the Alaskan frontier (1903), the first successful flight of a powered airplane (1903), the Pure Food and Drug Act (1906), the San Francisco Earthquake (1906), the financial Panic of 1907, and the first Model-T Ford automobile (1908)¹.

Massachusetts’ population was 2,805,346 in 1900^{2,3}, with 86% classified as “urban”. The textile and shoe industries were still the mainstay of the state’s economy but the paper and rubber industries and a wide range of others also flourished. Increases in the labor force, rising productivity, capital investments, favorable trade conditions,

and Boston's lead role in national finance resulted in a favorable economic position⁴. Immigration from Europe and French Canada was high. The state began a reorganization and modernization of state government and saw a rise in labor disputes and activism⁵. Boston was the second most valuable port in the United States in 1900 and the first in fishing. However, these rankings diminished during the decade due to external competition. The first U.S. motorcycle company—Indian Motorcycles—was founded in Springfield in 1901. The Chelsea Fire of 1908 destroyed nearly half the city.

Forest clearing had been high since 1880 and peaked in New England between 1909-1910⁶ when >2.5 billion board feet were harvested across the region. Second-growth forests were widespread and accessible, demand was high, and labor was readily available. The Massachusetts Legislature created a State Forester in 1904 to "promote the perpetuation, extension, and proper management of forest lands..."^{7,8}. The state had acquired parks and reservations in previous years, including the "Province Lands"⁹ and the summit of Mount Greylock¹⁰, but not "State Forests". The new State Forester urged acquisition of forest reserves and public forest land, although without immediate success.

In 1900, Congress enacted the Lacey Game and Wild Birds Preservation and Disposition Act¹¹ to supplement state laws for protection of "game and birds" by prohibiting interstate commerce of those animals killed in violation of state or territorial law, or imported to avoid the recipient state's prohibitions on sale. The forester and conservationist Gifford Pinchot (1865-1946) drove the formation of the Society of American Foresters in November 1900 to "...further the cause of Forestry...foster a spirit of comradeship...and disseminate[d] a knowledge of the purpose and achievements of Forestry"¹².

In July 1902, the first meeting of the National Association of Game and Fish Wardens and Commissioners was convened at Mammoth Hot Springs in Yellowstone Park¹³. In March 1903, acting under the authority of the Forest Reserve Act of 1891¹⁴, President Theodore Roosevelt issued an Executive Order setting aside Pelican Island in Florida as a bird reservation^{15,16}. The Transfer Act¹⁷ of February 1, 1905 shifted the nation's forest reserves from the Interior Department to Agriculture¹⁸, enabling Pinchot—the first Chief of the Forest Service—to work towards a system of national forests administered by professionals.

Roosevelt also used the Antiquities Act of 1906¹⁹ and a related statute to set aside both large and small tracts of land as National Monuments, commencing with Devils Tower in Wyoming in 1907. In 1905, under the leadership of Thomas Gilbert Pearson (1873-1943) and William Dutcher (1846-1920), most of the then-existing state Audubon Societies (Massachusetts was an exception) were jointly incorporated as the National Association of Audubon Societies (now the National Audubon Society)^{20,21}.

The geologist Nathaniel Southgate Shaler (1841-1906) anticipated consequences from the loss of biodiversity and the need for worldwide conservation and preservation of natural resources, and our "...difficult task of reconciliation with the environment... handing on to our successors all we can of our and their heritage of the earth as little impaired as we can contrive it to be"²².

Upland game were doing reasonably well in 1900²³, but [breeding] waterfowl less so. The Cape Cod gunner Anthony Elmer Crowell (1862-1952) drew on his experiences²⁴ to become one of the most renowned decoy carvers in the United States. White-tailed deer were rebounding as a result of the closed season implemented in 1898^{25,26}. However, most shorebirds, including the Eskimo curlew and American golden plover, were

not faring well. On Nantucket, the Eskimo curlew was seen in an “immense flight” in 1863, a “large flight” in 1883, and one bird in 1893²⁷. The last Massachusetts record was in 1913. The curlew later became extinct, the population having been drastically reduced during 1850-90 by a “perfect storm” of habitat conversion on the Great Plains, reduction or elimination of its insect prey, and unprecedented market hunting²⁸. The passenger pigeon, which William Wood saw about 1630 “...neither beginning nor ending, length, or breadth of these Millions of Millions”²⁹ disappeared from Massachusetts sometime after 1894 and was extinct as a species in 1914³⁰.

1900³¹: A new hydropower dam was constructed at Holyoke.

—The output of brook trout was nearly a record, with fry distributed to 17 applicants from the Adams hatchery, 35 from Hadley, 27 from Sutton, and 41 from Winchester. Some were also distributed as fingerlings. Several thousand landlocked salmon fingerlings, 4000 adult white perch, and 1 million “pike perch” (i.e., walleye) fry were also distributed. Carp were available at Winchester for distribution to interested parties. The calico bass (i.e., black crappie) was being considered for introduction.

—Work was being done on increasing brood stock and improving rearing ponds at the various hatcheries. The introduction of the “tub system” at Sutton (Figure 13) proved to be one of the most important events in the rearing of young fish.

—Also, 10 great ponds were stocked with trout and were opened to angling three days per week from June to November. The Commissioners expressed their intent to examine other great ponds as to their suitability for stocking.

—Pheasants were being seen in “greater or less” numbers in the localities where they have been stocked. Partridge, quail, and woodcock were increasing, apparently in response to the shortening of the open season. Heath hen were greatly diminished but deer were becoming “more or less” common.



Photo © MassWildlife

Figure 13. Tub system for trout propagation, Sutton State Fish Hatchery, about 1910. Hatchery Superintendent Arthur Merrill (l.), Commissioner John W. Delano (r.).

—Experiments were made at Winchester for two years with propagation of the Belgian hare³¹ (i.e., European rabbit) with the intent to stock the state with these animals. They were as hardy as native rabbits and more prolific. The fear that they may become a nuisance, as expressed by the U.S. Secretary of Agriculture, was “...believed to be groundless”²³.

—Enforcement was facilitated by distribution of a large number of “Abstracts of the Fish and Game Laws”³². It was often necessary that two or more deputies work together, fortunately, both volunteer and paid deputies seemed to work harmoniously.

—Legislation included a closed season on pheasant between 1900-1905³³, prohibitions on the sale of game birds between 1900-1903 and changes in season dates³⁴, and new authority to regulate fishing in stocked brooks³⁵.

—The Commissioners further recommended a closed season on shooting of gulls and terns, a correspondence between the squirrel and rabbit seasons and that for upland game birds, and a clarification to the Sunday hunting law.

1901³⁶: A recodification changed the Board of Commissioners title from “Inland Fisheries and Game” to that of “Fisheries and Game”, reflecting their enlarged duties to address the sea fisheries.

—About 865,000 brook trout fry, 44,750 fingerlings, and 8500 yearlings were distributed to applicants. Two closed brooks were stocked with 3000 yearlings. In addition, 2.6 million walleye fry, 15,000 rainbow trout fingerlings, 586 “Loch Leven” (i.e., a strain of brown trout) yearlings, 13,000 landlocked salmon fingerlings, and 250 4-year-old brook trout were stocked.

—Surveys of great ponds continued slowly. Stream pollution continued, especially from the discharge of sawdust from mills.

—Ring-necked pheasant were distributed to 55 cooperators and liberated in various parts of the state. Breeding of bobwhite quail and various exotic game birds was under consideration. Belgian hares were distributed and liberated by 25 cooperators; however, the interest among sportsmen subsided. Deer continued to increase.

—Legislation allowed the marketing of Colorado jackrabbits and Nova Scotia white hares³⁷, set a 6-inch minimum length for trout (except in Berkshire County)³⁸, and established a closed season on terns, most gulls, and the passenger pigeon³⁹.

—The Commissioners recommended a statute relative to search and seizure. Additional assistants and expanded authority were needed to conduct scientific investigations.

1902⁴⁰: The Commissioners participated in the Boston Sportsmen’s Show for the first time and cooperated with the Museum of Comparative Zoology at Harvard and with the Massachusetts Institute of Technology.

—The Commissioners stocked 6 million shad fry in Assawompsett Pond, Taunton Great Pond, and Furnace Pond. A record 1.01 million brook trout fry were distributed. Additionally, 65,000 fingerling and 6000 yearling brook trout and 1000 brown trout fingerlings were stocked into streams. Another 6500 rainbow trout fingerlings, 1000 landlocked salmon fingerlings, 2750 adult white perch, and 125 adult brook trout were stocked into 19 great ponds. Also, 350,000 landlocked smelt eggs were planted in ponds. The Commissioners could not determine if the stocking of walleye had been successful.



Figure 14. Brook Trout fishing, Fall Brook, Bernardston.

—Pond surveys continued. Pond and brook fishing was popular (Figure 14).

—Pheasants (n=350) were distributed to 39 cooperators for liberation; the birds were doing very well and may become a game bird in the future. Belgian hare (n=193) were distributed to 27 cooperators but the animal was not yet established. Deer were doing well and some farmers have suffered crop damage.

—Legislation authorized the Commissioners and assistants to make “investigations of questions relating to fish and game”⁴¹ and to prohibit the export of illegally taken fish or game⁴².

1903⁴³: There were reasonable advances in the breeding and distribution of fish, except for shad.

—It was not possible to rear fingerling trout at Hadley. Brook trout fry were less than last year due to the demand for fingerlings; 903,000 brook trout fry and 10,000 brown trout fry were distributed. In the fall, 59,660 fingerling brook trout were placed in brooks and 12,000 landlocked salmon fingerlings, 9000 brown trout fingerlings, 1500 yearling brook trout, and 1000 rainbow trout fingerlings placed in 34 great ponds. Also, 6 million landlocked smelt eggs were placed in ponds to provide eventual food for landlocked salmon. About 1.5 million shad fry were put into Furnace Pond and 2.2 million walleye fry into various ponds.

—Brook and brown trout were stocked in several rivers. There was a growing appreciation of the advancing value of brooks and ponds to the angler because of the increase of fish in them.

—Hunting of game may benefit the state; it is “...both desirable and necessary for man to occasionally get near to nature’s heart”. Upland game was generally plentiful although variable throughout the state. Pheasants increased substantially, especially in the eastern counties, and propagated birds (n=424) were distributed to 59 cooperators. Belgian hares (n=216) were distributed to 32 cooperators.



Photo © Mass Wildlife

Figure 15. Office of the Commissioners on Fisheries & Game, Boston, 1904. John W. Delano (left) and George W. Field (right).

—The killing of insectivorous birds for food by immigrants was of great consequence and dismay to farmers.

—The Commissioners noted that their specimen collections have increased and that “Additions have been made to the reference library...but little more can be done until it is possible to find a space for books”.

—Legislation provided for the better protection of shorebirds^{44,45}, prohibited the sale of wild trout after 1906⁴⁶, extended the closed season for deer until 1908⁴⁷, and addressed deer damage⁴⁸, increased the penalties for killing songbirds⁴⁹, and provided for bounties on “wildcats”⁵⁰.

1904:⁵¹ The Commissioners reported that a new record was set for breeding and distributing fish, pheasant propagation was less than in 1903, additional attempts to breed game birds (including grouse) were underway, a salaried biologist was hired, and field work continued despite funding limitations.

—However, more office space was required (Figure 15), a “first-class” hatchery was desirable, and there was an increased public demand for “facts, service, or material” including Annual Reports and pamphlets or posters with the fish and game laws.

—There were 954,000 brook trout fry, 40,400 fingerlings, and 200 carp distributed to cooperators, and 1000 rainbow trout fingerlings and 95 adult brown trout stocked in two ponds. Five thousand brown trout fingerlings, 6000 rainbow trout fingerlings, 1200 landlocked salmon fingerlings, and 1.5 million walleye fry were stocked in 15 great ponds. Also, 16 million landlocked smelt eggs were planted in several ponds which had been stocked with landlocked salmon. Frog breeding was being investigated.

—Ponds used for water supply purposes will not be stocked as the Commissioners have no jurisdiction⁵². Sawdust pollution of streams was a continuing problem.

—Natural populations of quail can only be maintained by special efforts, due to climatic conditions⁵³, including the severe winters of 1903-04. Breeding of ruffed grouse was being attempted at Clark University. The cold winter of 1903-04 also affected pheasant propagation; nevertheless, there were 208 pheasants distributed to 42 cooperators. Belgian hare (n=140) were distributed to 31 cooperators.

—Legislation included changes to the laws regarding taking of pickerel⁵⁴, expanded search and seizure powers for enforcement officers⁵⁵, and further protection of shore and marsh birds⁵⁶.

1905⁵⁷: The Commissioners admonished that “The inland fisheries...belong to all the people in common but [were] unwisely destroyed...It is our aim to care wisely for this heritage...In a similar way it is our province to protect the few survivors of our formerly abundant game birds and mammals. The wild turkey and the passenger pigeon, the great auk and the ‘rafts of ducks’ are gone forever”.

—The first biologist, David Lawrence Belding (1884-1970) was hired⁵⁸.

—An up-to-date hatchery with adequate rearing pools, and more working space, was greatly needed.

—The four existing hatcheries distributed 969,000 brook trout fry, 45,875 fingerlings, and 25,000 brown trout fry. Nineteen great ponds were stocked with 5000 rainbow trout fingerlings, 4500 landlocked salmon fingerlings, 3500 brown trout fingerlings, 2000 brook trout fingerlings, 100,000 walleye fry, and 8 million smelt fry. Nineteen other ponds were restocked with 2000 rainbow fingerlings, 2000 landlocked fingerlings, 5000 brown trout fry and 1000 fingerlings, 700,000 walleye fry, 68 adult brook trout, and 12 million smelt eggs. Black bass were stocked in three ponds in Plymouth.

—Pheasant (n=486) and Belgian hare (n=176) were distributed to cooperators. Attempts to breed white (i.e., snowshoe) hare were unsuccessful. Ruffed grouse had been decreasing alarmingly for several years due to changes in habitat and increases in hunters. Woodcock, upland plover, and “pinnated grouse” (i.e., heath hen) (Figure 16) were also doing poorly.

—Deer were increasing, with the population estimated at 5000 statewide. There may be 10-15,000 by the time the season closure expires in 1908.

—Legislation included further restrictions on the taking and sale of trout <6 inches in length⁵⁹, provision for the control or killing of dogs chasing deer⁶⁰, a requirement for alien hunters to be licensed⁶¹, and a closure of the open seasons on upland plover and mourning dove⁶².

—The Commissioners recommended legislation closing the season on pinnated grouse (i.e., heath hen) for at least five years, closing the season on wood ducks, abolishing spring shooting for migratory birds, providing for an open season on male pheasants coincident with the quail season, providing additional protection to certain gulls, and requiring hunters, anglers, and trappers to display all fish and game in their possession to an officer upon request.

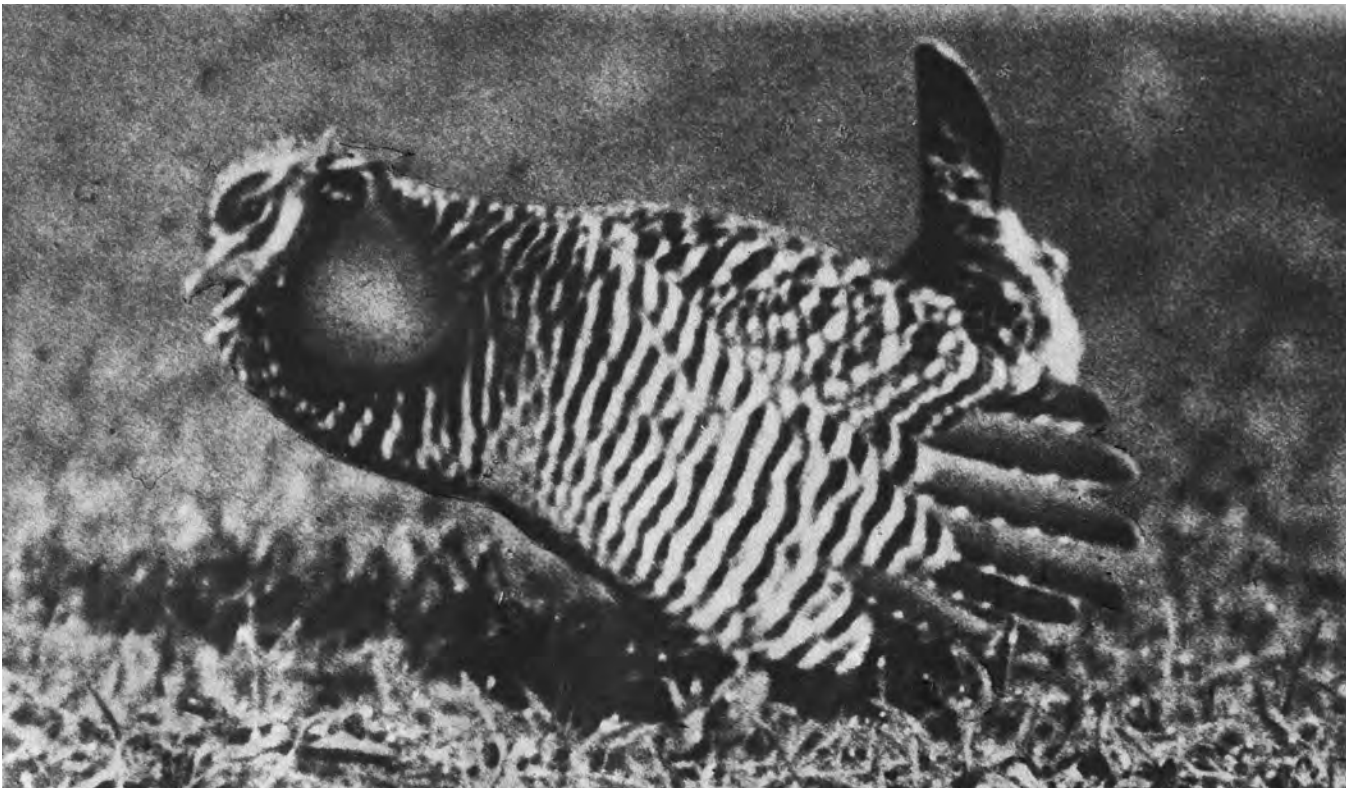


Photo © MassWildlife

Figure 16. Booming Heath Hen, Martha's Vineyard Heath Hen Reservation, 1920s.

1906⁶³: The shad fishery was vastly depleted and is doomed unless great steps are taken to save the fishery.

—The quality of water at the Hadley hatchery was adversely affected by a town reservoir which diverted water from Hart's Brook

—There were 1.334 million brook trout fry, 38,450 fingerlings, 500 yearlings and 2000 fingerling rainbow trout distributed. Twenty-six great ponds were stocked with 7300 brown trout fingerlings and 6 adults, 5750 rainbow trout fingerlings and 51 adults, 3250 landlocked salmon fingerlings, 160 adult brook trout, and 2 million smelt eggs. Seven ponds were restocked with 115 adult brook trout, 23 adult brown trout, 18 adult walleye, and 8 million smelt eggs.

—Pheasants were successfully established (both the English and Mongolian) yielding both recreation for the hunter and damage to agricultural crops. There were >3000 pheasants taken during the first pheasant hunting season. Quail need more protection and propagation. However, since Massachusetts is at the northern limit of quail range, the bobwhite here "leads a precarious existence". Southern quail were regularly liberated by sportsmen's organizations and the Commissioners are now undertaking breeding experiments.

—The Commissioners maintained a warden on the breeding grounds of the heath hen. A serious forest fire burnt through the habitat at hatching time.

—Deputy Rausch was shot in the chest in Rowley by a poacher, who claimed he thought the deputy was a "yeggman".

—Deer damage claims paid between November 1905 to November 1906 totaled \$2007. The sale of game was "sweeping the nation" and violations of the law are frequent and fines are inconsequential. The advantages of hunting licenses deserve further scrutiny.

—Legislation included a closed season on heath hen⁶⁴, a limited open season on walleye⁶⁵, a closed season on wood duck until 1911⁶⁶, regulated seasons and restrictions on sale of other wild ducks⁶⁷, restrictions on the hunting and sale of quail⁶⁸, prohibitions on the sale of prairie chickens⁶⁹, provisions for the Commissioners to occupy properties for scientific investigations⁷⁰, and further restrictions on the discharge of sawdust into brooks and streams⁷¹.

1907⁷²: During the past season, “...our brooks and rivers showed more conspicuously than ever the disastrous effects of the denudation of hillsides by woodcutters and forest fires”.

—There were 855,000 brook trout fry and 71,000 fingerlings distributed. Eighteen great ponds were stocked or restocked with 8000 brown trout, 3000 landlocked salmon, 2000 rainbow trout, 20 walleye, and 3 million smelt eggs. Brown trout (Figure 17) are being taken in numbers in the Westfield River.

—There were 302 pheasants and 54 Belgian hares distributed. The rearing and distribution of Belgian hares was discontinued.

—The annual crop of game was affected by the “insidious attacks” of carnivorous animals, including the domestic cat, and by infectious diseases (including “blackhead”).

—Heath hens were monitored and a warden employed. Donations from private individuals resulted in the purchase of 1600 acres to be placed under the control of the Commissioners. The Commissioners were authorized to purchase an additional 1000 acres of unimproved land for a heath hen reservation.



Photo © MassWildlife

Figure 17. Brown Trout taken in the Middle Branch of the Westfield River, Middlefield, April 1930.

—The colony of least and common terns at Katama showed a slight increase. The terns and laughing gulls at Muskeget were affected by cats. Those on the Elizabeth Islands were doing well. Upland plover were nearly vanished. Birds which are “distinctly valuable” to agricultural interests should be protected⁷³. Legal protection was given to many hawks and owls.

—The Commissioners advocated for the implementation of a general hunting license. The laws regarding waterfowl should be amended to cease all hunting on December 31. Poultry farmers want a bounty on foxes.

—Overall, the Commissioners stated that “The greatest hope for the continued maintenance and utilization of our useful birds and mammals lies in greater attention to well-considered attempts at artificial propagation...”.

—Legislation included a prohibition on the hunting of loons on fresh water and eagles anywhere⁷⁴, revisions to the hunting season for gray squirrels⁷⁵, a requirement for non-resident hunters to obtain a hunting license⁷⁶, the protection of certain birds of prey⁷⁷, provisions for a open season on deer no earlier than November

1908⁷⁸, and an authorization for the taking of land on Martha's Vineyard for a heath hen reservation⁷⁹.

1908⁸⁰: The Commissioners expounded on the economic value of conserving fish and wildlife populations, remarking that constantly increasing [public] attention to artificial propagation and protection of native varieties of birds is "...more essential at present than the introduction of new varieties". The value of the song and insectivorous birds is "beyond estimation" but there are between 50,000-100,000 people who hunt or fish and can spend \$1-2 million dollars annually. Support was urged for "the greatest possible number" of sanctuaries and breeding places for birds.

—There were 539,000 brook trout fry and 112,600 fingerlings distributed. There were 3150 rainbow fingerlings, 175 yearlings, and 12 adults; 12,600 brown trout fingerlings, 150 yearlings, and 12 adults; 940 brook trout adults; and 11 million smelt eggs stocked in ponds.

—There were 836 pheasants distributed. There are now 24 paid deputies.

—Legislation included expanded enforcement authority for deputies^{81,82}, and extension to the closed season on deer until 1910⁸³, provision for the sale of rabbits and hares lawfully taken⁸⁴, provision for a 1-month open season on grouse, quail, and woodcock⁸⁵, a season closure on pheasants⁸⁶, and provision for the registration (i.e., licensing) of resident hunters (effective in 1909)⁸⁷.

—The State Board of Agriculture was authorized to hire an ornithologist⁸⁸.

1909⁸⁹: The Winchester hatchery was closed due to the need for extensive repairs to the water supply. It was transferred to the M.D.C. in 1911. Later, it was used by the Boy Scouts (1926-1973) and then became a private residence).

—There were 802,000 trout fry and 128,000 fingerlings distributed. There were 1000 brook trout fingerlings and 1073 adults; 16,800 brown trout fingerlings and 75 adults; 4500 rainbow trout fingerlings' 1675 adult white perch; and 1 million smelt eggs stocked in ponds and rivers.

—There were 668 pheasants distributed. Captive breeding of ruffed grouse was unsuccessful.

—Deer were reasonably abundant, but the population did not appear to increase in 1909. There was \$8000 in deer damage paid to farmers.

—A legislative resolve called for an investigation of the cost of propagating birds and mammals⁹⁰. Legislation provided for the establishment of refuges for birds and mammals⁹¹, restrictions on the taking and sale of trout and salmon⁹², revisions to the open seasons for grouse, quail, and woodcock⁹³, restrictions on the open season for waterfowl⁹⁴, revisions to the open seasons for rabbit and hare⁹⁵, and changes to the licensing structure for non-resident hunters⁹⁶.

“CONSERVATION HAS CAPTURED THE NATION...
[IT] IS A MORAL ISSUE”¹ THE 1910s

In the U.S.A., the 1910s were a turbulent time², reflecting World War I (Aug. 1914-Nov. 1918) and the United States’ entry into the War (Apr. 1917). The surge of almost 1.5 million immigrants from southern and eastern Europe in 1910-1914, the “Black Tom” sabotage in New Jersey (1916), the controversial Espionage Act of 1917 and Sedition Act of 1918, as well as growing labor and social unrest culminating in the 1919 anarchist bombings and the “Red Scare” and the Palmer Raids (1919-20) thrust a sense of foreboding into the nation. The decade also saw the National Park Service established under the Department of the Interior (1916), the introduction of daylight savings time (1918), the ratification of the 18th [prohibition] Amendment (1919) and the founding of Radio Corporation of America (1919).

Superimposed on these events was the great influenza pandemic³ (Jan. 1918-Dec. 1920) which killed 20-50 million people worldwide. Probably arising in the Midwest, its transmission was facilitated by crowding in Army camps—including Camp Devens, Massachusetts—and large troop movements. More people died in one year from influenza than during the “Black Death” of the 1300s in a century. The parallels with 21st century emerging infectious diseases—arising from animal-human interactions—are striking.

Massachusetts also saw the Lawrence Textile Strike (1912), the opening of the Cape Cod Canal (1914), aid to Nova Scotia following the massive Halifax ship explosion (1916), the severe winter of 1917-18, Governor John Calvin Coolidge’s (1872-1933) forceful end to the Boston Police strike (1919), and the ratification of the 74th amendment (allowing referendums) to the Massachusetts Constitution. Textiles, footwear, and worsted goods remained the industries leading in employment⁴.

The forester Gifford Pinchot—emotional in temperament and progressive in outlook—advocated conservation as a utilitarian practice, counterpoised with the protectionism of John Muir. “Conservation”, to Pinchot¹, was development, the “fullest necessary use of all the resources”; the prevention of waste; the development of positive scientific methods for resource conservation; and the ecumenical use of resources for the many, not just the privileged few, for the longest time. An allied attitude was that of the geologist and educator Charles Richard Van Hise (1857-1918) who argued⁵ that the “...purpose of conservation is man. Its purpose is to keep the resources of the world in sufficient abundance so that man may have a happy, fruitful life, free from suffering—a relatively easy physical existence...to reduce the intensity of struggle for existence”⁶.

The American Game Protective [and Propagation] Association was incorporated in New York in September 1911 to promote wildlife restoration on a national and international scale⁷. The Association began hosting an annual “Game Conference” in 1914. It became the “American Game Association” in 1930, merging into the newly organized “American Wildlife Institute”⁸ in 1935 and relinquishing sponsorship of the annual conference⁹. The zoologist and author William Temple Hornaday (1854-1937), who earlier had led the fight to save the American bison¹⁰, vigorously advocated for the preservation of animal and plant life¹¹, including extinct and nearly extinct species.

The Weeks-McLean Migratory Bird Act¹² was enacted by Congress and approved by President William Howard Taft (1857-1930) in March 1913. It eradicated the practice of market and plume hunting for migratory birds, abolished spring shooting, closed

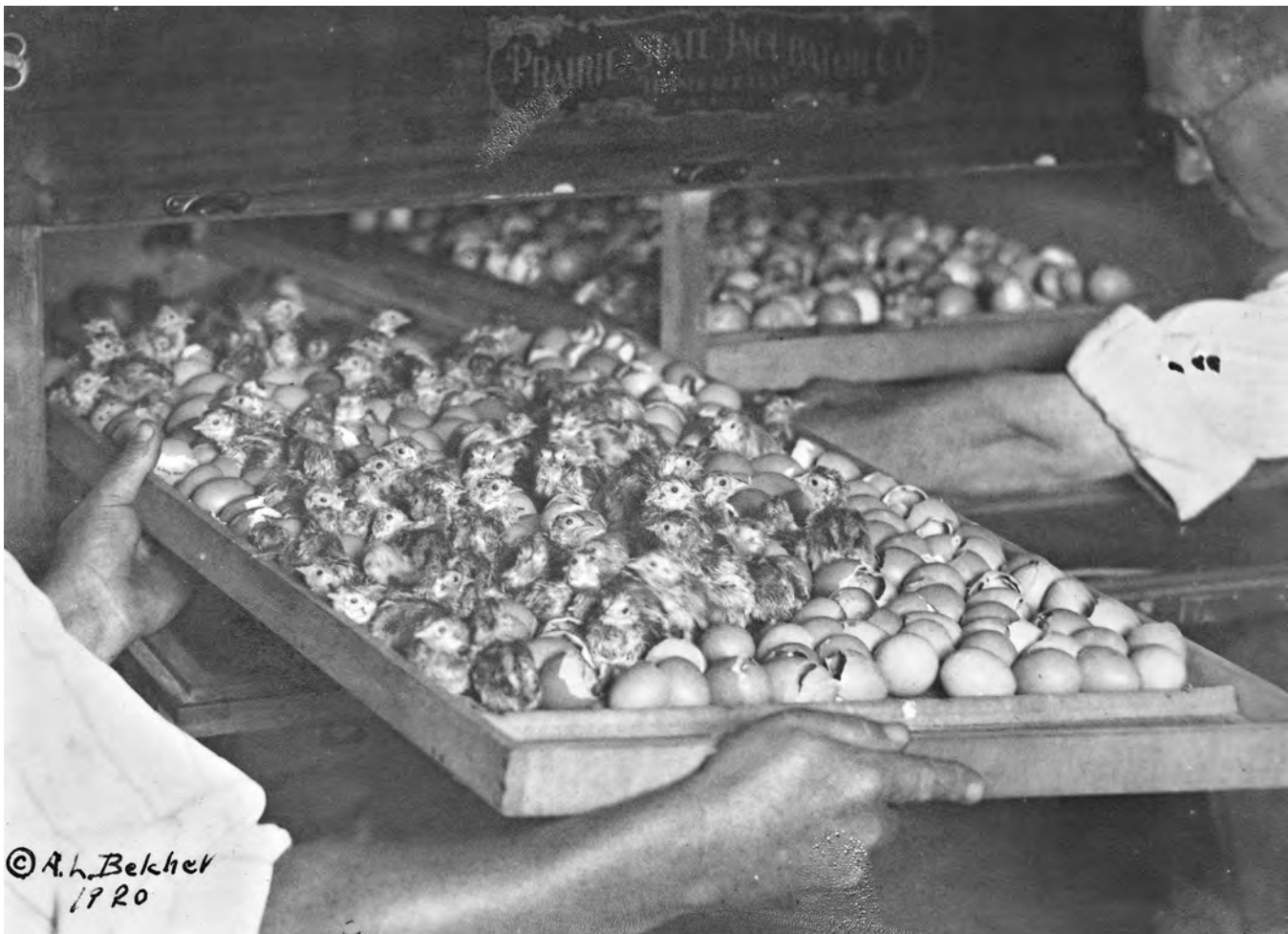


Figure 18. Pheasant chicks newly hatched from incubator, Marshfield State Game Farm, 1920.

entirely the seasons on almost all so-called “nongame” birds, and gave the Secretary of Agriculture powers to set closed seasons for the taking of migratory game birds⁷. However, the law’s constitutionality was challenged and a Senate resolution moved forward a draft treaty between the United States and the Dominion of Canada¹³. The Treaty¹⁴ was formally signed in August 1916⁷ and the enabling Act¹⁵ approved by Congress and President Thomas Woodrow Wilson (1856-1924). The U.S. Supreme Court subsequently upheld the new statute’s constitutionality¹⁶, with Justice Oliver Wendell Holmes, Jr. (1841-1935) commenting “But for the treaty and the statute, there soon might be no birds for any powers to deal with...we are of the opinion that the treaty and the statute must be upheld”.

World War I placed great demands on the nation’s coal supply for military and naval purposes, which demanded that the public minimize fuel consumption¹⁷. These requirements, coupled with an extremely severe winter on the East Coast in 1917-18¹⁸, resulted in coal rationing and a temporary shift back to firewood for heating purposes. Nationally, consumption of fuelwood increased at least 25% to 102.9 million cords in 1917¹⁷. In addition, tremendous amounts of timber were required on the battlefield for shoring trenches and bunkers¹⁹. At the war’s end, however, fuelwood consumption dropped back and continued its slow slide as coal became available once again.

In Massachusetts, the State Forest Commission began to acquire “unimproved” lands for State Forests for reforestation, public access, and as examples of forest management practices. The first three forest acquisitions were Otter River (1915), Myles Standish (1915), and Harold Parker (1916)²⁰.

1910²¹: The Commissioners cautioned that threats to the “natural and normal number of animals” included the large, cosmopolitan unassimilated population which “makes considerable forays” upon fish and wildlife, an exceedingly active market demand²², and a shoreline taken up by municipalities and summer residents. These conditions were disastrous to wild birds, mammals, fish, mollusks, and crustaceans. Set against this “general slaughter” were the sportsmen. Dead wild game must be kept as far from the market as possible.

—There were 925,000 [brook] trout fry and 133,500 fingerlings distributed and 10,000 brown trout fingerlings and 1717 white perch stocked in ponds and rivers. Massachusetts secured a supply of the Potomac catfish (i.e., white catfish) for future stocking.

—Ring-necked pheasants were being reared (Figure 18) and liberated in large numbers. Massachusetts has also been the first state to successfully rear and liberate [bobwhite] quail. There were 696 pheasants and 182 quail stocked.

—The deer season was opened for the first time since 1898, in the five western counties only. Deer damage was a real problem and payments have grown from \$237 in 1903 to \$7351 in 1910. The estimated population prior to the 1910 season was 8000, with 1382²³ deer taken that year, including 717 bucks, 373 does, and 292 unspecified. There were no hunting-related human deaths or injuries.

—There were now 30 deputies, three of whom were assaulted in 1910, including one who was shot in the face with bird shot.

—Legislation included revisions to the open seasons on grouse, quail, and woodcock²⁴, provisions for additional protection to certain birds²⁵, restrictions on hunting methodology for game birds, waterfowl, and rabbits²⁶, provisions for an open season on deer²⁷, increases in the number of deputies²⁸, and a resolve addressing the biological survey of public waters²⁹.

1911³⁰: The Commissioners remarked that the market for the sale of game in Boston is “much demoralized” but that a law preventing the sale of any species of wild bird was highly desirable.

—There were 348,000 brook trout fry and 29,000 fingerlings, 105,000 brown trout fry and 20,000 fingerlings, 1772 adult white perch, and 10 million landlocked smelt eggs distributed. A new trout hatchery was in the planning stage.

—A preliminary report was made regarding the survey of public waters. A detailed report will take years to complete. Initially, great ponds were being surveyed³¹ using an 1873 listing, various physical and biological features were being assessed, and a map was in preparation.

—The Commissioners believed that it is now time to consider the breeding of fur-bearing animals and to regulate the trapping or shooting of furbearers at the time when pelts are of no value.

—There were 625 pheasant distributed. Experiments in ruffed grouse and bobwhite quail propagation continued. One hundred “extremely wild” European gray partridges were received for breeding experiments.

—There were 1270³² deer taken in the 6-day season.

—Legislation included closure of the heath hen³³ and wood duck³⁴ seasons until 1916, the requirement for a liberation permit for releasing fish or spawn into state waters³⁵, a prohibition on the night shooting of waterfowl³⁶, a reduction of the black duck bag limit³⁷, provision for the establishment of a game farm³⁸, changes to the requirements for a resident hunter's certificate³⁹, restrictions on the hunting ground), 1919. and importation of wild turkeys⁴⁰, and provision of funds and authorization for a new fish hatchery⁴¹.



Photo © MassWildlife

Figure 19. Wilbraham State Game Farm, superintendent's house and new barn (rearing facilities in back-ground), 1919.

1912 to 1914⁴²: In a consolidated 3-year report, the Commissioners remarked that several fishways were being rebuilt, biological examinations of state ponds and streams were completed, pollution from manufacturing wastes and sewage was compromising “our finest streams and tributaries”, two new hatcheries and five game farms were constructed, and a number of reservations were established.

—The Commissioners also participated and held office in several national organizations and erected displays and exhibitions at agricultural fairs and other venues.

—The Hadley hatchery will soon be sold⁴³. New hatcheries were put into operation at Sandwich^{44,45} (1911-14)—including a rearing station at East Sandwich and other facilities at Sandwich proper—and Palmer (1912) and a new game farm at Wilbraham (1912)(Figure 19). Game was being propagated at Sandwich and also at facilities^{46,47} in Marshfield (1914), Norfolk (State Hospital, 1912), and Sharon (1912).

—There were 6,772,700 brook trout fry, 1,751,000 fingerlings and 7952 adults; 350,000 brown trout fry, 4000 fingerlings, and 260 adults; 42,800 Chinook salmon fingerlings and 10 adults; 52,600 smallmouth bass fingerlings and 3 adults; 18,000 largemouth bass fry and 2300 fingerlings; 25,000 landlocked smelt adults; 24,812 white perch adults; 27,020,000 walleye fry; 10,200,000 yellow perch fry; and 11,600 horned pout adults distributed.

—Ducks of eight species were propagated at Sutton and Wilbraham, with the mallard showing the most success. Sixty-two white hare were liberated in Berkshire and Hampden counties.

—An open season on pheasants⁴⁸ (both sexes) was held for the first time since 1907 with 8903 birds taken.

—The deer hunting season^{49,50} continued and was open in 11 counties (Dukes, Nantucket and Suffolk were closed) by 1913.

—As of November 1914, the Commissioner's department had 87 employees in addition to the three Commissioners, 31 of which were in law enforcement, 34 in hatcheries, six at reservations and five at game farms. There were currently 37 state reservations,



Figure 20. Bull Moose, Whitney Preserve, October Mountain, Washington, 1915.

nine bird and game preserves, and nine additional areas held under fee or lease.

—Legislation included prohibitions on hunting with or possessing rifles, pistols, or revolvers during the deer season⁵¹, prohibition of poisoning or snaring birds or mammals and regulating trapping⁵², provisions for a closed season on moose^{53,54} (Figure 20), prohibition of the sale of wild birds and game (except hares and rabbits) unless lawfully propagated⁵⁵, and closure of the quail season in Essex County for five years⁵⁶.

Legislative resolves and resolutions provided for an investigation and report on pheasant damage and food habits⁵⁷, a codification of the fish and game laws⁵⁸, and a request to the federal government to enact protection for migratory game birds⁵⁹.

1915⁶⁰: The Commissioners emphasized their important efforts in education, including publications, interactions with the Boy Scouts, exhibitions, and lectures.

—Water pollution continued to degrade streams, and the Commissioners planned to enforce the law⁶¹ regarding “fisheries value” broadly, considering both the present and future production of food fish and the recreational value to the public.

—There were 1,960,000 brook trout fry, 941,000 fingerlings, and 12,125 adults; 105,000 brown trout fry, 2000 fingerlings, and 290 adults; 53,160 rainbow trout fingerlings, 49,600 Chinook salmon fingerlings; 208,000 smallmouth bass fry and 72,320 fingerlings; 144,000 largemouth bass fry; 8,850,000 walleye fry; 10,500,000 yellow perch fry; 100,000 adult white perch; 20,300 adult horned pout; and 1 million landlocked smelt eggs distributed.

—There were 1384 young and 762 adult ring-necked pheasant, 9 “versicolor” pheasant (i.e., green or Japanese pheasant), 6 Reeves pheasant, 7 Mongolian pheasants, 1286 mallard ducks, 4 wood ducks, 12 black ducks, 377 young and 4 adult quail, 19 wild turkeys, and 6 Canada geese liberated between 1913-1915.

—Deer hunting was open in all counties except Nantucket and Suffolk.

—Heath hen were increasing on Martha’s Vineyard. Least terns on Martha’s Vineyard were less numerous than last year but Wilson’s (i.e., common) terns are abundant on Nantucket.

—Legislation included a prohibition on hunting or possession of firearms by resident aliens (except property owners)⁶².

1916⁶³: There was an internal reorganization of the Board of Commissioners to make the central office the “clearing house” and to make operations more efficient. Law enforcement was placed under a chief deputy for the first time. One person was placed in charge of all propagation, both fish and game. The biologist was placed in charge of the “publicity division”. All subsequent annual reports will cover the actual fiscal year (Dec. 1 to Nov. 30) instead of the calendar year as was previously done.



Photo © MassWildlife

Figure 21. Massachusetts Game & Fish exhibit building, Great Barrington Fair, September 1915.

—The Commissioners' staff exhibited⁶⁴ at 28 fairs and events during the past year (Figure 21) and presented many lectures.

—There were several necessary endeavors to project into the future, including additional surveys and inventories, the propagation and introduction of suitable new species, more extensive scientific investigations, and enhanced public education.

—There were 1,540,000 brook trout fry, 656,955 fingerlings, and 6805 adults; 2500 brown trout fry and 190 adults; 1,900 rainbow trout fingerlings; 371,000 Chinook salmon fingerlings; 19,400 landlocked salmon fingerlings; 122,000 smallmouth bass fry and 58,800 fingerlings; 63,000 largemouth bass fry and 3500 fingerlings; 53,660 adult white perch; 16.8 million yellow perch fry; 14.64 million walleye fry; 96,900 horned pout; 200 pickerel; 26,400 landlocked smelt; and 34 million landlocked smelt eggs distributed.

—In addition, 2147 young and 238 adult pheasants, 1267 young and 120 adult mallard ducks, 264 young quail, and 295 white hare were distributed.

—Bluegill and yellow catfish were being considered for propagation. Shad culture was once again being considered.

—The heath hen was just "holding its own" but consideration was being given to the liberation of these birds on Nomans Land Is. and Cape Cod, and in Myles Standish State Forest.

—Feral cats were destructive to wildlife⁶⁵ (Figure 22). A "savagely hunting cat" measuring >3 feet from nose to tail and weighing 22 lbs. was shot in South Carver.



Figure 22. Warden K. Eckert with 12-lb. house cat that killed an adult rabbit, 1929.

salmon fry and 319,075 fingerlings; 77,170 adult white perch; 16 million yellow perch fry; 2000 horned pout fingerlings; 150 adult pickerel; and 36 million “freshwater” smelt eggs and 62,000 adults liberated.

—The fishways on the Merrimack River were being investigated as impediments to the passage of introduced Chinook salmon.

—There were also 1564 young and 301 adult pheasants, 1461 young and 640 adult mallard ducks, 280 young quail, and 104 white hare liberated.

—The pheasant season was open in all counties except Barnstable, Dukes, and Nantucket. Quail were doing poorly and Hampden and Middlesex counties⁷³ were closed to quail hunting for five years.

—Deer were doing well. The deer season now begins on December 1⁷⁴ and will be reported in the 1918 report.

—Heath hens were transferred to Long Island, N.Y. (n=18), but all died. Eight birds were also sent to a private breeder (2 died); the remainder were released on Nomans Land Island but their status is unknown. The Martha’s Vineyard heath hen reservation now has a full-time attendant.

—The Commissioners distributed grain and chaff to “numerous” persons to feed birds during the harsh winter.

—A large colony of gulls and terns on Muskeget Island was threatened by cats. Cats are now prohibited on that island⁷⁵. Other tern colonies were threatened by cats and skunks. The Commissioners will ask for monies for a vermin-control agent to patrol

—Deer hunting was popular and deer doing well. However, in some counties deer must either be exterminated or greatly reduced due to their “menace” to the fruit industry.

—There were 64,901 resident, 386 non-resident, and 80 alien licenses sold.

—Legislation included changes to the minimum length for taking pickerel⁶⁶, changes to the open season for brook trout⁶⁷, a provision that minors under the age of 18 must have written permission of parent to obtain a hunting license⁶⁸, and clarifications on the prohibitions on hunting waterfowl from a powered craft⁶⁹.

1917⁷⁰: Exhibitions, educational endeavors, and participation in national affairs increased⁷¹. Four new state reservations were established.

—Two new hatcheries⁷² were built, one in Montague and one in Sunderland. The Adams hatchery and the Norfolk game rearing facility were discontinued.

—There were 1,319,000 brook trout fry, 643,000 fingerlings, 6295 adults; 44,250 rainbow trout fingerlings; 244,350 smallmouth bass fry and 46,140 fingerlings; 60,885 largemouth bass fingerlings; 28,000 landlocked salmon fingerlings and 1125 adults; 192,000 Chinook

these areas next year. Vermin are a great threat but the “inefficiency and harmfulness [of the bounty system] was strikingly manifest”.

—The introduced starling^{76,77} is likely to become as great a pest as the English sparrow and may now be hunted⁷⁸. The European hare^{79,80}—an agricultural pest—has arrived in the state and may be hunted at any time in Berkshire County.

—Legislation included limitations on freshwater fishing implements to hook and line, except for taking alewives, herring and eels⁸¹, and an admonition authorizing and directing the Commissioners and their deputies to enforce the laws relating to dogs⁸².

1918⁸³: The World War affected the Board of Commissioners and the protection of fish and game by public agitation to utilize freshwater fish to offset the high price of food, by mercenary motives on the part of businessmen who sought to exploit this public concern, by the diversion of needed supplies and construction material, and by diminishment of the Commissioners’ staff—10 of whom were called into service (one was killed).

—The Board’s Chairman attended a meeting in Washington of the Migratory Bird Treaty Act Advisory Board, of which he is a member. The interest in lectures, published materials, and news releases on fish and game matters continued. Local fish and game associations were of “real value” in furthering the interests of the Board of Commissioners. Automobiles were becoming a necessity in advancing the work of the deputies.

—There were 501,300 brook trout fingerlings and 11,557 adults; 44,000 rainbow trout fingerlings; 208,000 smallmouth bass fry and 10,500 fingerlings; 44,500 largemouth bass fingerlings; 6350 landlocked salmon fingerlings; 418,900 Chinook salmon fingerlings; 66,850 adult white perch; 725,000 yellow perch fry and 13,050 fingerlings; 17,718 horned pout fingerlings; 3.3 million walleye fry; and 29,000 freshwater smelt adults and 31.95 million saltwater smelt eggs distributed.

—The Sandwich “Bird Farm” was in operation. Game breeding at Sutton was discontinued and the activities were transferred to Marshfield. There were also 1092 young and 232 adult pheasants, 1048 young and 475 adult mallard ducks, 498 young quail, 22 adult Mexican quail, 55 young wood ducks, and 296 white hares distributed.

—Breeding waterfowl continued to be hampered by human encroachment on the nesting areas. The availability of salt water ducks to the hunter is determined by food supply and weather conditions. The black duck appears to be the one duck which would [still] afford good sport in this state as there are still large breeding areas existing. There was uncertainty in the public’s mind as to the effect of the new federal migratory bird law. However, in Massachusetts, the state “...simply imposes on itself more of a restriction than the Federal government asks it to impose”.

—The Commissioners, together with the State Ornithologist, provided funds for caretakers at the major tern and gull colonies. The few Nantucket quail apparently disappeared while those liberated on Martha’s Vineyard appear to be breeding. Ruffed grouse studies continued; however, a great toll was taken during the extremely severe winter of 1917-18. Duck hawks nested on Rattlesnake Mountain in Prescott. Cats, foxes, snapping turtles, and birds of prey were enemies to bird life.

—White hare have disappeared or nearly so in many areas of the state. Hares were liberated regularly (Figure 23) but there was no clear evidence that this resulted in a substantial increase.



Figure 23. Warden W. Waterhouse liberating Snowshoe Hare, 1935 or 1936.

—Every year there was a considerable amount of deer damage to orchards, in part because the fruit-growing industry was rapidly growing. The winter feeding of birds and the planting of fruit- and seed-bearing shrubs was encouraged.

—Legislation included an authorization to commence the construction of fishways on the Merrimack River⁸⁴.

1919⁸⁵: It was necessary to constantly revise the Board's finances, postpone needed repairs and replacements, and to curtail exhibitions and lectures due to the great burden the war placed on the taxpayers.

—Work on the Lawrence and Lowell fishways was started but was held up by finances and construction difficulties. Atlantic salmon eggs (from New Brunswick) were brought to the East Sandwich hatchery but a large hatching loss was incurred.

—The Commissioners distributed 529,930 brook trout fry, fingerlings, and adults; 30,425 rainbow trout fingerlings; 1000 Loch Leven trout; 353,360 Chinook salmon fry; 3000 Atlantic salmon fingerlings; >14.9 million yellow perch fingerlings; 123,600 white perch adults; 2.4 million walleye fry; 63,100 horned pout; 250 pickerel; 26 million freshwater smelt eggs; and 49,700 adult smelt.

—There were 1481 young and 158 adult pheasant, 2218 young and 347 adult mallard ducks, 156 young bobwhite quail, 106 young wood ducks, 65 black ducks, five Mexican quail, and 585 white hare distributed.

—Hunting licenses increased from ≈58,500 in 1918 to ≈73,500 in 1919.

—Since the passage of the spring shooting bill, black ducks showed up year after year in increasing numbers. One Massachusetts-banded mallard was shot on Lake Manitoba.

—Pheasant were holding their own and the season was opened on Nantucket for the first time. Gray squirrels may have been affected by the ongoing chestnut blight⁸⁶. The winter of 1919-20 was a harsh one and may have affected game populations. However, ice fishing has increased in popularity.

—Piping plovers had a very successful year and were found to be “unusually numerous” at Dartmouth. Special deputies were hired to guard bird colonies at Monomoy, Gull Island, and Nauset. Herring gulls were believed to have bred at Monomoy. Ram Island has ≈2000 pairs of common terns, which were increasing.

—Eagles were not increasing. A pair was seen in Bourne and another in Lynnfield. There were a very few in the Berkshires.

—A governmental reorganization consolidated most executive functions into “departments”, to be effective December 1, 1919⁸⁷, including a “Department of Conservation” encompassing forestry, fisheries and game, and animal industry.

—Other legislation included provisions for the spearing of carp and eels⁸⁸, prohibitions on quail hunting in Dukes, Essex, and Nantucket counties until 1922⁸⁹, authorization for the Commissioners to regulate the taking of smelt in great ponds⁹⁰, implementation of a closed season on the hunting and trapping of raccoons⁹¹, provision for a bounty on seals⁹², and the requirement for a freshwater fishing license and provision for a “combined” hunting and fishing license^{93,94}.

THE DIVISION OF FISHERIES & GAME—THE EARLY YEARS, 1920-1947:

A SUMMARY

The “Commission on Fisheries & Game” was replaced on December 1, 1919, by the “Division” of Fisheries & Game, with an appointed “Director” as Chief Executive Officer, subordinate to the “Commissioner” of the Department of Conservation

—After the first Director, William C. Adams, served several terms (resigning in 1931), the Division entered a lengthy period with Directors serving short terms or a single 3-year term.

—The Department was reorganized in 1939, splitting off “Marine Fisheries” and “Wildlife Research & Management” as separate Divisions.

—The Director’s editorials firmly emphasized the role of outdoor recreation as healthy and inspiring, the benefits and services provided by the Division to all the state’s citizens, the need for sustained and adequate funding, the modernization of fish and game propagation facilities, the requirement for scientific surveys and investigations, and the values of public education projects.

—The Division briefly formed an unofficial Advisory Council with several sportsmen’s, birding, and agricultural organizations, and the Director met on a regular basis with representatives from the various sporting County Leagues.

—The Division began cooperation with the Massachusetts State College regarding field investigations, research, and student training courses.

—The Commonwealth acceded to the new Federal Aid in Wildlife Restoration Act in 1939, thereby receiving much-needed funds for game research, surveys and inventories, and habitat development and management.

—Propagation facilities were modernized and upgraded, often with the aid of federal funds from the Works Progress Administration, or with the labor force of the Civilian Conservation Corps.

—Stream surveys and the evaluation of game covers were initiated as well as experimental planting of duck foods in certain rivers.

—Funds were secured for establishing public fishing grounds along streams and rivers and leases were initiated along the Squannacook, Westfield, and other rivers.

—Atlantic salmon restoration was once again the subject of interest and initial efforts were initiated at the East Sandwich Hatchery.