——Other legislation included provisions for the spearing of carp and eels[88], prohibitions on quail hunting in Dukes, Essex, and Nantucket counties until 1922[89], authorization for the Commissioners to regulate the taking of smelt in great ponds[90], implementation of a closed season on the hunting and trapping of raccoons[91], provision for a bounty on seals[92], 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.

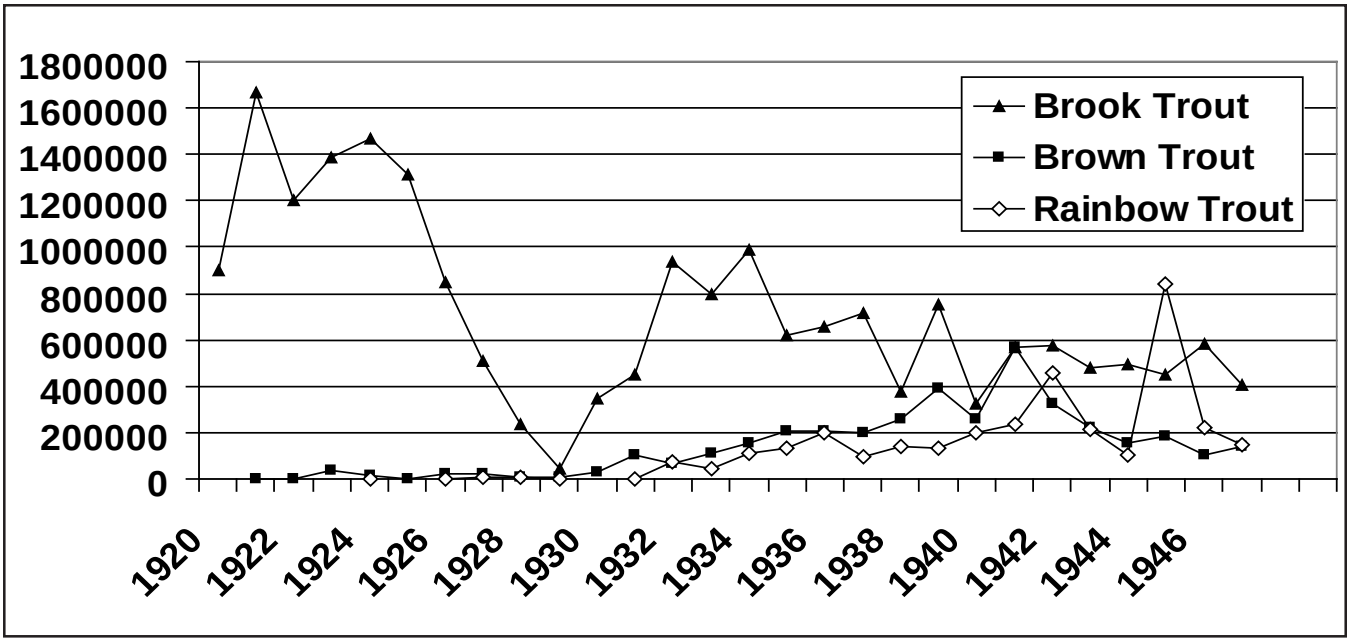

Figure 24. Numbers of Brook, Brown and Rainbow Trout (all age classes) stocked in Massachusetts waters, 1920-1947.

——The Division continued to experiment with propagation or importation and release of both native and non-native species, including muskellunge, ruffed grouse, chukar partridge, Reeves pheasant, wild turkey, [black-tailed] jackrabbit, cottontails, snowshoe hare, and raccoon.

——The Division stocked (including those from clubs and private propagators, state forest pond rearing facilities, and "salvaged" from natural water bodies) (Figure 24) more than 6,644,350 brook, 1,718,500 brown, and 889,850 rainbow trout, 3,344,400 walleye fry, 3,287,400 horned pout, 1,898,450 yellow perch, 1,400,700 white perch, 1,061,100 bluegills, 871,325 black crappie, 719,525 smallmouth bass, 560,000 tadpoles, 269,750 Chinook salmon, 222,500 muskellunge fry, 114,690 pickerel, 29,725 "sunfish", 15,750 crawfish, 4175 largemouth bass, 2780 rock bass, 1375 landlocked salmon, 750 redfin pickerel, and 37,490 shiners, suckers, dace and "forage fish".

——The Division also stocked (including those reared and liberated by clubs and private propagators) 143,660 [ring-necked] pheasant, 73,125 [bobwhite] quail, 33,125 white hare, 18,956 cottontails, 58 raccoons, 42 ruffed grouse, 17 wood ducks, and eight Reeves pheasant.

——Beaver and opossum continued to expand their range in the state and will soon require attention and management.

——The state ornithologist position was established in the Division after its termination in the Department of Agriculture. The ornithologist began work on waterfowl, seabird colonies, and duck hawk (i.e., peregrine falcon) nesting sites.

——The heath hen became extinct, despite substantial efforts by the state and private entities. The heath hen reservation was turned over to the Division of Forestry.

——Billingsgate Island was gifted to the Division as a wildlife sanctuary. Penikese Wildlife Sanctuary continued to be staffed by the Division and was used as a rabbit rearing colony and tern refuge. Maintenance work was done on other sanctuaries as funding permitted. The large tern colony on Ram Island [Mattapoisett] sanctuary was closely monitored.

"THE STOCK MUST HAVE PLACES TO FEED AND TO BREED": THE 1920s

In the U.S.A., the 1920s were a time of continuing social, political, and economic upheaval[1]. The prohibition of alcoholic beverages spawned a surge in organized crime, the Wall Street terrorist bombing (1920) drove crackdowns on anarchists and foreigners, the Teapot Dome oil-leasing scandal (1922-23) tainted the Interior Department, immigration was sharply limited (1924), the staged "*Tennessee v. Scopes*" trial drew attention to the teaching of evolution (1925), Charles Lindbergh flew solo across the Atlantic (1927), and the "Black Tuesday" Wall Street crash (1929) ushered in the Great Depression. In Massachusetts, the murder trial (1920-21) of anarchists Ferdinando Nicola Sacco and Bartolomeo Vanzetti drew worldwide attention, as did the dramatic sinking and salvage of the submarine *S-4* off Provincetown (1927). The Massachusetts Highway Fund was established (1925), dedicating motor vehicle fees to road improvements and traffic law enforcement. The first passenger flights were scheduled from Jeffery Field (later Logan Airport) in 1927. In 1929, Massachusetts became the first state to provide uniformity in traffic control devices and to require insurance as a precondition for registering a motor vehicle[2].

In 1922, the Massachusetts Department of Conservation acquired the 10,000 acre Whitney estate—the largest contiguous privately owned tract in the state—in Berkshire County[3]. In conjunction with 1500 acres purchased earlier, and 2000 acres belonging to the City of Pittsfield, the newly named October Mountain State Forest became one of the largest properties in state ownership. Reforestation and reevaluation of New England's forests also drew attention. Although nearly half of southern New England remained forested, the forester Austin Foster Hawes (1879-1962) admonished that "Never in the history of New England has there been…so great a need for the systematic raising of timber"[4].

The Ecological Society of America established a committee in 1917 to list "…all preserved and preservable areas in North America in which natural conditions persis[ted]". Their report "*Naturalist's Guide to the Americas*"[5] was published in 1926 and listed 37 named preserved areas in Massachusetts and proposed protected status for 22 others.

The author and professor Dallas Lore Sharp (1870-1929) eulogized the uplifting effects of the outdoors on our wellbeing: "For next to bodily health, the influence of the fields makes for the health of the spirit…What we need to do, and are learning to do, is to go to nature for our rest and health and recreation"[6]. Henry Beston Sheahan (aka "Henry Beston")(1888-1968) concurred: "For the gifts of life are the earth's and they are given to all, and they are the songs of birds at daybreak, Orion and the Bear, and dawn seen over ocean from the beach"[7]. Similar in concept, although different in approach, the sportsman and journalist Ernest Miller Hemingway (1899-1961) conceived of hunting and fishing as a source of rebirth and refuge. His collection—collectively a *Bildungsroman*—of semi-autobiographical Nick Adams stories[8] often emphasizes this belief. This is keenly set forth in "Big Two-Hearted River" (1925) depicting the young Nick's emotional need to retreat to a Michigan trout stream after his traumatic experiences in World War I.

The 1920s also saw the beginnings of a shift among zoologists from anatomy to populations and community ecology. Charles Sutherland Elton (1900-1991) vigorously argued that "When one starts to trace out the dependence of one animal upon another, one soon realizes that it is necessary to study the whole community living in

one habitat, since the interrelations of animals ramify so far"[9]. The evocative narrations[10,11] of John Charles Phillips[12] (1876-1938) brought forth his experiences while hunting, fishing, contemplating warblers and trailing arbutus, and serving on the "Associated Committees for Wild Life Conservation".

The Federal Water Power Act[13] was enacted by Congress in 1920 to facilitate coordination among federal agencies in developing hydropower by centralizing the scattered authorities in a new Federal Power Commission (later the Federal Energy Regulatory Commission). Later amendments and court decisions encapsulated a significant—although not definitive—role for fish and wildlife issues and their advocate agencies in the hydropower licensing process[14].

Although the Lacey Act ostensibly included all "wild animals and birds", in practice it was construed as meaning only game birds and furbearing mammals. In 1926, Congress amended[15] the Act to include provisions for unlawful interstate transportation of fish[16], specifically including "black bass" (*Micropterus* spp.). In another landmark case, the U.S. Supreme Court, in *Missouri v. Holland*[17], upheld the Migratory Bird Treaty Act, ruling that the treaty-making powers vested in the federal government by the U.S. Constitution overrode state game ownership rights.

A significant Massachusetts case[18] in 1926 found that "In this Commonwealth the title to wild animals and game is in the Commonwealth in trust for the public, to be devoted to the common welfare".

After at least 150 years, beaver were back in Massachusetts. A small colony—immigrants from New York—was found in West Stockbridge in 1928[19]. These were eventually supplemented by three more live-trapped in the Catskills and released in Yokum Brook in Lenox in 1932[20].

Photo © *MassWildlife*

Figure 25. Director William C. Adams.

1920[21]: The Division of Fisheries and Game was created on December 1, 1919 as a component of the new Department of Conservation. William C. Adams (1880-1948) (Figure 25) of Newton, a lawyer and 6-year veteran of the Commission of Fisheries and Game, was appointed as Director (1-year term) by the Governor and confirmed by the Governor's Council. The enforcement officers were renamed "fish and game wardens".

——Concerns expressed by the Director included the belief that all species of fish and game are only "holding their own", that great emphasis has and will be placed on artificial propagation, and that public concern is low: "Unless he happens to be a fisherman and hunter, or one particularly interested in birds, the preservation of the wild life means little to him and he gives it no consideration". The hope of the future was in financial assistance by means of license fees, vigorous efforts by the state "doing things which it can do", the public education of landowners to do "the things which *they* can do", and the education of both exploiters and the public to have restraint, make individual contributions, and assist landowners. The educational work of the Division is one of the most important branches of the service.

——There were 94,600 resident sporting licenses, 38,550 resident fishing, 700 various non-resident and alien sporting licenses, 2409 various non-resident and alien fishing licenses, and 1069 minor trapping (not needed for adults) sold in FY1920. The current year was the first for the new fishing license.

——Winter feeding of birds, both feed and grit, must continue in harsh winters. The winter of 1919-20 was one of the most severe in the experience of the Division. Grouse need continued protection and the severe winter took a "terrible toll" on quail. Deer were harassed by dogs in the deep snow and came into the breeding season in poor condition, but the fawn crop appeared to be excellent nonetheless.

——It is now time to place more restrictions on the taking of freshwater fish, due to the substantial increase in angling. The value of stocking Chinook salmon was in doubt, due to lack of returns. Walleye were established in several ponds.

Image © Courtesy of Ernest S. Tucker

Figure 26. The successful goose hunter thanks his guide, Essex County, about 1895.

——There were 902,800 brook trout fry, fingerling, and adults; 308,500 "silver trout" (from N.H., now extinct); 248,305 Chinook salmon; 413,675 smallmouth bass fry, fingerlings, and adults; 7000 largemouth bass fingerlings; 250 yellow perch fingerlings; 112,500 white perch adults; 9.75 million walleye fry; 5100 horned pout; 600 pickerel; and 29.75 million freshwater smelt fry distributed.

——There were 3900 young and adult pheasant, 79 quail, 528 mallard ducks, 56 black ducks, 63 wood ducks, 1004 white hare, and 17 eastern cottontail distributed. Black duck rearing was unnecessary as populations are increasing. Mallard propagation was financially prohibitive. Wood ducks will continue to be raised for the time being. Black-tailed jackrabbits (n=20) were liberated on Martha's Vineyard but evidently did not breed or establish.

——It was a banner year for [Canada] goose shooting (Figure 26) and the flight was sustained until the end of the report period (i.e., 11-30-20).

——Terns were doing well, but a heavy gale in June devastated the Monomoy colony.

——There were now limitations on the open seasons for trapping mink, muskrat, otter, raccoon, and skunk. The excessive trapping of muskrat will require drastic measures (i.e., a 30-day season) to bring their numbers back.

——Legislation included additional protection for certain birds of prey[22], revisions to the fishing license requirements[23], authorization for the Commissioners to regulate the taking of salmon[24], and various provisions relating to trapping seasons and methodology[25]. A legislative resolve authorized the sale of the Adams hatchery[26].

1921[27]: Director Adams was reappointed for a 3-year term. He remarked "…we have wasted our substance in riotous living". Needed remedies will include the removal of pollution of all kinds from coastal waters, fishways to be installed and maintained, permanent coastal bird sanctuaries patrolled against poaching and vermin exterminated, and land to be acquired by the state for public shooting grounds. Finances affect the agency's operation; a license fee increase effective in 1922 will certainly help.

——There are now ≈100 state fish and game clubs with a membership totaling ≈12,000. The Division is pushing forward with education as rapidly as resources permit. It was necessary to limit exhibitions to eight fairs. Some towns have appointed their own fish and game wardens under the appropriate provisions of law.

——The fishways on the Merrimack River are now in operation. It appears that alewives are using them. The so-called "Merrill Pond System" in Sutton was established as a breeding location for pond fish.

——Propagation of Chinook salmon was not attempted this year. The collection and hatching of walleye and distribution of white perch was curtailed due to funding issues. The Division continued to try to establish a breeding stock of brown trout. Work was started to evaluate the stocking of bluegills.

——There were 1,667,800 brook trout fry, fingerlings, and adults; 2000 brown trout yearlings; 102,535 smallmouth bass fry and fingerlings; 16,625 largemouth bass fry and fingerlings; 15,500 white perch; and 103,250 horned pout distributed.

——Winter feeding was unnecessary in 1920-21 due to an open winter. Black duck were doing well and wood duck were slightly up. Gulls and terns increased after the cessation of commercial exploitation but were threatened by the paucity of undisturbed nesting sites, either by people or vermin.

——Oil pollution was becoming more common and alarming, "…large number of ducks have perished in the coastal water of Massachusetts from this cause" as well as many dovekies.

——Quail continued to do poorly; for many years there were scarcely any except south of Boston, including Cape Cod. Heath hen showed a slight increase and were dispersed over Martha's Vineyard.

——The deer harvest (n=1466) was the greatest since 1913. One Berkshire County resident estimated at least 100 moose in the state. Four (one with 46-in. antlers) were illegally killed during the 1920 deer season.

——There were 6010 young and adult pheasants, 38 young and adult quail, 76 young and adult wood duck, and 1073 white hares distributed.

——Trapping was light due to low pelt prices. The fox breeding industry is growing in the eastern states; there are now at least eight breeders in Massachusetts.

——Legislation included authorization for certain persons to hunt vermin on state reservations[28]; the requirement for a liberation permit for releasing wild birds and mammals[29]; revisions to the season dates for hunting hares and rabbits in Dukes and Nantucket counties, revisions to bag limits, and a prohibition on sale of those rabbits taken within Massachusetts[30]; the setting of creel limits on five species of warm water fish[31]; changes to the minimum length (≥ 12 in.) for pickerel[32]; provisions for the payment of moose damage[33]; and revisions to the licensing laws to include women, to provide for

various combination licenses, and to increase license fees[34].

1922[35]: The Director admonished that land protection was needed. It is essential to reveal the lack of protection existing under present laws and to "…indicate what should be done to provide for all time a net-work of public shooting grounds, bird sanctuaries and public recreation areas in general…It will never be possible to make this plan a reality at a less cost than today".

——The Annual Reports will be shortened in accordance with state law requiring them to be a "brief summary" with recommendations. The tendency towards posting land seems to have diminished due to the educational work of the Division and the organized sportsmen.

——Oil pollution continued to be highly destructive to aquatic life and oiled murres, auklets [sic], grebes, and ducks were examined.

——Experiments are being conducted with white and channel catfish. Propagation of the bluegill with stock received from Pennsylvania was carried out at Stockwell Ponds at the Sutton hatchery. Stock was also obtained from King's Pond in Plymouth, where they had been privately released.

——There were ≈1,204,785 brook trout fingerlings and adults; 1968 brown trout fingerlings and adults; ≈236,950 smallmouth bass fry, fingerlings, and adults; 10,820 largemouth bass fingerlings and yearlings; 23,000 yellow perch fingerlings; 75,200 white perch adults; 14,943 "catfish"; 112,275 horned pout fry, fingerlings, and adults; 7,175,000 walleye fry; 5475 bluegill fingerlings and adults; 451 pickerel fingerlings and adults; and 3 million smelt fry distributed.

——Initial reports presaged a lean flight of Canada geese but both the spring and fall flights of brant were heavy. Monomoy Island was "overrun" with feral cats and skunks but the breeding season was successful nonetheless. Quail did reasonably well in southeastern Massachusetts despite the wet spring. Hare stocking in central and western Massachusetts seemed to have been successful; however, there were few suitable areas for stocking east of Worcester County.

——Fox hunting was more popular than it has been in a generation. Weasels were becoming noticeably numerous and more destructive to game than was formerly realized.

——There were also 7035 young and adult pheasants, 48 young quail, 111 young and adult wood ducks, 17 mallard ducks, and 1110 white hare distributed.

——Legislation included an extension to the closed season on quail in Dukes, Essex, Hampden, Middlesex, and Nantucket counties until 1925[36], authorization for fish and game wardens and deputies to enter private lands in performance of their duties[37], prohibitions on the use of traps with scented bait on land of another[38], and authorization for the possession of lawfully taken or imported fish and game outside the closed season when in compliance with laws of the state of origin[39].

1923[40]: The Director again emphasized the critical need for land protection, affirming that when landowners can cut down the forests <etc.> and riparian property owners dam or modify the streams "…the business of protecting and propagating the wild life over the State…can never be carried on with the greatest efficiency and the largest present and permanent results". There now seemed to be a steady increase in the amount of posted lands, especially along streams.

Figure 27. Wardens Seaman and Macker sorting salvaged fish at Gen. Butler Ames Pond, Tewksbury, 1929.

——Director Adams was elected President of the International Association of Game, Fish & Conservation Commissioners. David Belding resigned as biologist and was succeeded by J[ames] Arthur Kitson (1891-1971).

——The Division was slowly building up a breeder stock of brown trout at the Palmer hatchery but almost all the 1922 hatch was lost. Walleye were established in very few waters, despite intensive effort. A few catfish were beginning to show up in the Connecticut River. Bluegill, calico bass, and long-eared sunfish were salvaged from ponds in Tewksbury (Figure 27) and Sutton and distributed.

——There were 1,383,500 brook trout fingerlings and adults; 39,230 brown trout fingerlings; 337,160 smallmouth bass fry, fingerlings, and adults; 678 calico bass adults; 41,700 yellow perch fingerlings and adults; 55,907 white perch adults; 14 walleye adults; 185,875 horned pout fry, fingerlings, and adults; 38,353 bluegill fingerlings and adults; 567 long-eared sunfish fingerlings; 1012 roach (*Rutilus* sp.) fingerlings; 6167 pickerel fingerlings and adults; and 146 "miscellaneous species" distributed.

——The Attorney General issued an opinion regarding public rights of way to great ponds[41]. The public has certain rights which differ for ponds ≤20 acres and those >20 acres. The control of great ponds is in the Legislature, which may regulate and alter the public rights.

——Quail were very scarce and the season was open in only three counties. There was some gain in Dukes County due to favorable weather. Heath hens have become scarce despite legal protection and the creation of a reservation. Dr. John C. Phillips contributed funds for an intensive biological survey of the bird, to be conducted by Professor Alfred Otto Gross (1883-1970) of Bowdoin College.

——There were 10,466 young and adult pheasant (Figure 28), 45 young and adult quail, 58 wood ducks, 25 mallard ducks, four black ducks, and 1090 white hare distributed.

——No warden protection was given to the gull and tern colonies, in large part due to the widely dispersed nature of the colonies and the Division's financial inability to give protection to all of them.

——Trappers must now provide an annual report of the furbearers trapped or killed. There were 644 such reports in 1923 with muskrat (n=9128) predominating and skunk (n=3334) second. Fox continued to increase despite the lack of protection.

Photo © *MassWildlife*

Figure 28. Truckload of young pheasants (64 baskets with 512 birds), North Beacon Street Bridge, Watertown, August 1923. Credit: MassWildlife.

——Legislation included a requirement for aliens that prove that they are entitled to resident licenses[42], a prohibition on the use of snares and poison for taking animals[43], a closure of the quail season in Hampshire, Norfolk, and Worcester counties until 1925[44], a requirement for trappers and fur takers to make an annual report[45], establishment of a limited open season and minimum length for walleye[46], a prohibition on the sale of freshwater fish and amending the season dates for certain fish[47], a prohibition on the sale of brook trout and establishing a minimum length for brown and rainbow trout[48], an authorization for the Commissioner of Conservation to receive real and personal property in trust[49], and a provision that Massachusetts law must generally conform to federal law regarding migratory game birds[50].

1924[51]: The Director previously "…discussed the considerations which must underlie any plan to permanently increase [the] wild life supply. There is one further point which should be advanced and emphatically stressed…". The Division once thought that the diminishment could be checked simply by reducing the taking of animals. However, the destruction by rod and gun is only a temporary phase. The destruction wrought by the wiping out of the producing areas is permanent. The stock must have places to feed and to breed.

——The first bequest of land under the 1923 law was the Nye homestead in Sandwich, given by Ray Nye of Sheboygan, Wisconsin. The land is valuable for fish and game propagation and abuts the East Sandwich hatchery and comprises the land on which the East Sandwich Bird Farm is located.

——There is no evidence that catfish have established themselves and the efforts regarding Chinook salmon are still questionable.

——There were 1,471,216 brook trout yearlings and adults (Figure 29); 13,650 brown trout fingerlings; 2028 rainbow trout fingerlings and adults; 75,100 Chinook salmon fingerlings; 101,720 smallmouth bass fingerlings and adults; 32,240 yellow perch fingerlings and adults; 47,836 white perch adults; 30,420 bluegill fingerlings and adults;

800 sunfish adults; 42,000 horned pout fry; fingerlings, and adults; 2818 pickerel adults; and 15,000 shiners distributed.

——There have been three years of very dry weather during the hunting season, which has impacted public access to the woodlands. Quail were doing alright in the three open counties but were almost non-existent elsewhere. Several additional donors contributed funds to the biological investigation of the heath hen conducted by Professor Gross.

——The shore birds were not holding their own. Some of the smaller species showed an increase, but the larger species did not show satisfactory growth. The breeding colonies of gulls and terns were not receiving adequate protection, due to lack of funds. A caretaker was stationed on Monomoy during June and July to destroy vermin and chase away rowdy beachgoers.

——Penikese Island in Gosnold, formerly a leper colony, was transferred to the Division as a bird refuge and sanctuary. It is a natural breeding ground for sea birds and terns which will be "fostered in every possible way". The island may also be stocked with quail and cottontail rabbits for use as a source for stocking the mainland.

——Property in Ayer was leased from Warden Edward Evens Backus (b. 1889) in order to expeditiously produce and distribute pheasant eggs. There were 12,232 young and adult pheasants, 56 adult quail, 50 Hungarian partridges, 22 wood ducks, 240 cottontail rabbits, and 1288 white hare distributed from the various game farms.

——Legislation included prohibition of the possession of a ferret without a permit[52], provision for certain warrantless search and seizure powers to wardens[53], authorization for the Metropolitan District Commission to control gulls and terns fouling certain reservoirs[54], an increase in fees paid to city and town clerks for issuing licenses[55], and establishing Penikese Island as a bird sanctuary[56].

Photo © *MassWildlife*

Figure 29. Stewart stocking truck at the Sutton State Fish Hatchery, 1925.

1925[57]: Except for our native black duck, we are entirely dependent on what takes place in other States and in Canada. Whether or not these birds come here depends entirely on what takes place on the breeding and wintering grounds. Migratory birds congregate in the narrow strip just north of the southern U.S. boundary. Here again the hand of man is against them. The natural wintering areas are being drained. It is as much importance to the people of Massachusetts that the production areas of the north are to the residents of those areas, and the "storage" areas of the south are to the southerners.

——License fees fell short of financing the recreational aspects (i.e., less commercial fisheries) of the Division's work by ≈$16,350.

——There were 1,314,320 brook trout fingerlings and adults; 320 brown and Loch Leven fingerlings and adults; 61,000 Chinook salmon fingerlings; 151,825 smallmouth bass fry, fingerlings and adults; 13,211 yellow perch fingerlings and adults; 131,025 white perch adults; 102,090 horned pout fingerlings and adults; 3790 bluegill fingerlings and adults; 7646 pickerel adults; and 23 miscellaneous (rainbow trout, largemouth bass, walleye) adults distributed.

——The hunting season was one of the most favorable in several years due to appropriate weather conditions and a favorable game supply. Quail increased on Martha's Vineyard due to several years of protection and limited stocking. The heath hen population was lower than at any time in history and emergency efforts are now needed to save it from threatened extinction.

——The new Ayer Game Farm was in operation part-time as an egg-producing farm. There were 6742 young and adult pheasant, 154 adult quail, 297 cottontail rabbits, and 1062 white hare distributed.

——The Federation of Bird Clubs of New England volunteered to pay for wardens to patrol six important gull and tern colonies. Penikese Island will be developed as a rabbit and hare breeding area and a caretaker will be assigned. Five additional sanctuaries (Carr Island, including adjacent Ram Is.; Egg Rock; Milk Island; Mount Watatic; and Ram Island in Mattapoisett) were transferred, purchased, or gifted to the Division.

——Legislation included an extension on the closed season on quail in seven counties until 1928[58], a provision that the muskrat trapping season end on March 1 consistent with that for other furbearers[59], a provision that the rabbit and hare hunting seasons end on February 15 except on Nantucket[60], an increase in the bounty payment for wildcats (i.e., bobcat and lynx)[61], establishing Egg Rock as a wildlife sanctuary[62], a revision to the licensing laws to provide for a sporting (hunt and fish) license, eliminating separate hunting and fishing licenses, and providing for an adult trapping license[63], and a provision that the authorities in charge of state lands may permit hunting or trapping thereon to control wildlife damage, including damage to forest reproduction[64].

1926[65]: [Unlike in the European countries] "…in the United States…Title to all the game lies in the people. Some years ago it was finally realized that the migratory species of game belongs to all the people of all the states…The states, on the other hand, have complete jurisdiction over the resident species of game found within their borders". A moderate license fee is now charged to cover the exploitation of these natural resources which are the property of all the people. Our sportsmen are just beginning to realize the extraordinary privileges represented in the low-priced license.

——In this year, with the new fees, income exceeded the budgetary appropriation. Thus, it was argued that the appropriation in future years should be at least equal to the income from licenses and fines. A coastal warden service was established by law, principally to enforce the Public Health regulations regarding contaminated shellfish waters.

——A new group of sportsmen's organizations, the "Massachusetts Associated Sportsmen, Inc." was formed from a substantial number of local fish and game clubs.

——There were 846,305 brook trout fingerlings, yearlings and adults; 23,360 brown and Loch Leven fingerlings, yearlings and adults; 250 rainbow fingerlings; 18,000 Chinook salmon fingerlings; 169,200 smallmouth bass fry, fingerlings and yearlings; 19,650 yellow perch yearlings and adults; 86,500 white perch adults; 153,370 horned pout fingerlings, yearlings and adults; 139,675 bluegill fingerlings and yearlings; and 8218 pickerel fingerlings and adults distributed. Chinook salmon fishing has been reduced to three ponds on Cape Cod.

——Myles Standish State Forest was opened to deer hunting due to the serious damage to the nursery stock. Disease was identified in rabbits imported from the western states and a special permit and 10-day quarantine is now required when persons wish to import rabbits from those areas.

——There were 2591 young and adult pheasant, 241 cottontail rabbits, and 1625 white hare distributed.

——Shorebirds continued to do poorly. The federal government has indefinitely closed the season on golden plover. Land was donated for a wildlife sanctuary in Boxford. The Federation of Bird Clubs continued to acquire coastal bird breeding grounds and to pay for or contribute to wardens at four colonies.

——Penikese Island was staffed by a caretaker. The 79 rabbits first stocked have now increased to "hundreds" and it was planned to trap and distribute some in 1927. Few terns were reared due to heavy storms and a "backward" spring.

——Legislation included an increase in the penalty for taking short pickerel[66], a provision that the authorities in charge of state forest reservations may allow licensed hunters to hunt deer during the open season to control deer damage[67], a repeal of the incorporation of the Pasque Island Corporation thus returning the island to local jurisdiction[68], authorization for landowners and farmers to take hare and rabbits damaging crops <etc.>[69], provisions for the taking of shiners and suckers for bait[70], a change to the fees for sporting licenses and revisions to the license classes for minors[71], and a provision for the hiring of coastal wardens[72].

1927[73]: [The]"… education of the public to a proper appreciation of our wild life resources and the intelligent use of them, has long been recognized by conservationists throughout the country to be the greatest single need of this generation…[however] there is no concerted movement to start with the abc's of conservation of all our natural resources, to be followed up by a systematic presentation to our growing youngsters and on through to the grown-ups…". The remedy is not easily arrived at. It will require education in all school grades, more research scientists, short and attractive magazine articles, and an informed press supplied with the necessary informative material. "To be able to see the wonders of our wild life stock with a knowing eye is a priceless possession."

——A detailed analysis of revenues was presented to the Commissioner on Administration and Finance, arguing forcefully for an increased appropriation: "…this Division functions in the interests of all the people of the Commonwealth [but] only a very small group of our citizens today are contributing towards its maintenance."

——Additional properties on Little Wachusett Mountain, on Mount Watatic, and the Hoxie property in Sandwich were received as gifts for wildlife sanctuaries. The warden force has now been completely motorized.

——The policy of stocking fall fingerlings was discontinued and fish distributed when they reach legal length. The Division now has its own brood stock of Loch Leven trout. There were 507,465 brook trout fry, fingerlings, yearlings and adults; 23,525 brown and Loch Leven fingerlings, yearlings, and adults; 4420 rainbow yearlings; 12,000 Chinook salmon fingerlings; 190,320 smallmouth bass fry, fingerlings, yearlings, and adults; 9040 yellow perch fingerlings, yearlings, and adults, 83,520 white perch adults; 97,685 bluegill fingerlings, yearlings, and adults; 3810 calico bass adults; 75 sunfish adults; 113,525 horned pout fry, fingerlings, yearlings, and adults; 4275 pickerel fingerlings, yearlings, and adults; 25,000 muskellunge fry; 490,000 walleye fry; 56 lake trout fingerlings and yearlings; and nine landlocked salmon adults distributed.

——The East Sandwich Bird Farm was enlarged by the gift of the Hoxie property. Ayer Game Farm was operated as a year-round station for the first time, including both for hatching and rearing.

——The New England Ruffed Grouse Investigation Committee was proceeding under the direction of Professor A.O. Gross. The Committee planned to continue its work for several more years.

——Quail moved naturally from Penikese Island to Cuttyhunk. A second warden was assigned to the heath hen reservation. Dr. Gross was investigating the effect of disease on the bird as the decline in their numbers continues. There are <30 heath hens remaining. More hunters now seek rails due to the lack of opportunity to hunt shorebirds.

——There were 3619 pheasants, six quail, 240 cottontail rabbits, and 1210 white hare distributed.

——Muskrat topped the list of furbearers taken, with 33,773 reported by 1687 trappers.

——The tern breeding season on Penikese was unfavorable, but with a larger production of young than in the previous year.

——Legislation included an inclusion of Loch Leven trout in the fisheries laws with equal status to brown trout[74], establishment of creel limits and open seasons for bluegills and shiners[75], and a requirement that the Director of Fisheries and Game must approve deer and moose damage payments[76].

1928[77]: The provision of certain species of birds, mammals, and fish is a business proposition, thus financing the enterprise is the most important question. At this time, revenues can only be increased by increasing license fees and by instituting a system whereby the issuance fees retained by city and town clerks may be saved. Several states (e.g., Oregon) have a system whereby sporting goods stores and similar venues issue licenses without a service fee. The Division argued in favor of such a system.

——The Division also argued for an increase in the number of commercial game farms and fish hatcheries and for public participation in a program of vermin control. The Division requested funds to acquire one or more wildlife sanctuaries and provide for their maintenance. There should be at least 10 such properties of 3000-5000 acres across the state.

——Loch Leven trout will now be considered to be "brown trout" for purposes of reporting and stocking. Consolidating all age classes, there were 234,620 brook trout; 9248 brown trout; 6012 rainbow trout; 14,500 steelhead trout; 5120 Chinook salmon; 300,240 smallmouth bass; 33,310 yellow perch; 32,550 white perch; 220,540 bluegills; 90,340 calico bass; 1016 sunfish; 49,770 horned pout; 9022 pickerel; 40,000 muskellunge [fry]; 32 walleye; and two largemouth bass distributed.

——If the Division desires to increase pheasant hunting opportunities, it must increase their numbers. The sportsman does not realize that if he kills one cock bird, it will cost twice its license fee to put that one bird back into the wild.

——The only out-of-state source for stocking cottontails is in the west, where tularemia is prevalent. Thus, the Division does not import stock from there because it wishes to keep Massachusetts disease-free.

——The special warden for the heath hen reservation was discontinued. The birds are still dwindling rapidly; however, the state will continue efforts to preserve the species.

——There were 2423 young and adult pheasant, 295 cottontails, and 1970 white hare distributed.

——Gulls and terns were benefitting from the establishment of coastal sanctuaries. Cottontail propagation on Penikese is now proceeding satisfactorily. It was a good year for common tern production there.

——The Division received a gift of the 5000-acre Edward Howe Forbush sanctuary in Hancock.

——Legislation included a prohibition on apparatus with >10 hooks in any inland waters[78], a prohibition on snares, nets and traps for taking any bird[79], an extension of the closed season on quail in seven counties until 1930[80], an increase of the open season on deer to two weeks[81,82], a provision that the Commissioner of Conservation may set seasons for shorebirds (except woodcock) and any Rallidae by rule and regulation[83], and a change in the system for evaluating and paying deer damage[84].

1929[85]: Director Adams summarized his remarks from the previous Annual Reports and presented them in concise format at a national conference[86]. A majority of people visit Massachusetts to enjoy the seashore and countryside rather than to see historical monuments[87]. There is no greater adjunct to these places than an abundance of wildlife. Accordingly, wildlife should receive greater recognition and support than it now does, for both aesthetic and economic reasons. The protection of non-game birds is of equal importance to that for game species.

——The Division continued to advocate that the Act of 1869 be repealed and public rights to fishing in ponds between 10 and 20 acres in size be restored.

——Private gifts added to the Boxford Sanctuary, the Merrill Pond system, and the East Sandwich Bird Farm.

——There were 40,700 brook trout; 5682 brown trout; 1035 rainbow trout; 40,000 Chinook salmon; 286,355 smallmouth bass; 61,505 yellow perch; 59,560 white perch; 198,545 bluegills; 3454 other sunfish; 264,840 horned pout; 14,180 pickerel; 25,000 muskellunge [fry]; 124,980 black crappie (calico bass); 51 largemouth bass; 400 shiners; and 32 walleye distributed.

——The wood duck was holding its own. Goose migration was hampered by aircraft and the construction of coastal flying fields. The Migratory Bird Conservation Act ("Norbeck-Andresen Act") of 1929[88] authorized the purchase or lease of waterfowl refuges, and established a Migratory Bird Conservation Commission to review and approve the Secretary of the Interior's selections[89].

——Legislation to allow the Director to regulate the grouse season failed. Work continued on developing a breeding stock of bobwhite quail. The heath hen is now functionally extinct as there is only a single male bird remaining[90,91]. The success in breeding cottontails on Penikese stimulated the establishment of breeding colonies at other locations.

——There were 16,599 young and adult pheasant [a record], 27 adult quail, 476 cottontails, and 2205 white hare distributed.

——Legislation included a requirement for a permit to liberate or import any bird or mammal[92], establishing the open seasons, creel limits and prohibiting sale of calico bass[93], and establishing the open seasons and a minimum length for northern pike and muskellunge[94]. A legislative resolve provided for a special commission to survey and revise the inland fisheries and game laws[95].

THE ECONOMY COLLAPSES, A PROFESSION ARISES: THE 1930s

The 1930s[1] were initially dismal, characterized by the worldwide poverty-stricken years of the Great Depression, the Dust Bowl in the midwestern U.S.A. in the mid-1930s, continuing acts of gangsterism and rural banditry, and armed clashes in Asia (1931) and Europe (1939) which eventually led to the Second World War. The Social Security Act (1935) was enacted; Boulder Dam was completed (1936), forming the [then] world's largest man-made reservoir; the 40-hour work week was established (1938); and the U.S. economy began to recover with European orders for military equipment (1939).

In 1930, the unemployment rate in Massachusetts was 6.4%, as compared to 5.0% for the U.S. as a whole[2]. Agricultural production was shrinking and there was a decline in industrial manufactures. Nevertheless, New England had weathered crises before, had a distinct cultural character and set of abilities, and the solutions to the present crisis reflect New England's genius and are not merely copies of the ideas of others[3].

Coastal Massachusetts sustained a surge in rum running during the prohibition years[4], an illicit boon to the state's hard-strapped fishermen. Acknowledging metropolitan Boston's need for water, the Metropolitan District Commission sought to create a large new reservoir in western Massachusetts. The Swift River was dammed and four

towns disincorporated[5,6] and the 412-billion gallon Quabbin Reservoir (and the adjacent 186 mi^2 watershed) was created.

The great flood of March 1936[7]—the state's worst in 300 years—devastated much of the state and stimulated the construction of flood-control reservoirs. Two years later, the Great Hurricane of September 1938 slammed into New England, killing 680 persons and causing $400 million in property damage[8].

New England's forests in the 1930s were "…inferior second-growth…" and largely "…comparatively valueless…"[9] due to soil deterioration, the effects of insect pests and disease, and a decline in the use of native lumber. However, important changes were aborning. Forests were growing and aging, plantings and regeneration were underway, fire suppression and management was being implemented, and public demand for forest recreation was increasing[10]. In Massachusetts, forest inventories and forest-type surveys had begun and a district management system was under discussion[11]. The massive 1938 hurricane knocked down ≈500 million feet of standing timber in southern New England, but ≈150 million feet were salvaged[12].

In 1930, the American Game Policy Committee of the American Game Conference presented its report[13] to the Conference. This visionary report set forth seven fundamental actions: (1) extend public ownership and management of game lands as far and fast as possible, (2) recognize the landowner as the custodian of public game on all other land, (3) experiment with ways to bring the parties into concert and adopt the ways which yield game management (4) train men for the profession, (5) find the facts on what to do and how to do it, (6) recognize the non-shooting protectionist and the scientist as co-partners in the endeavor, and (7) provide funds from general taxation, sportsmen and private entities.

Subsequently, a U.S. Senate Committee developed a model state law for game and fish administrative law[14]. This model adopted a key provision from the 1930 policy report providing for an independent Game and Fish Commission, with unpaid members appointed for staggered terms, having policy-making powers and ("*it is vital*")[13] a chief executive appointed by and responsible to it. In 1936, the Council of Sportsmen's Clubs of Massachusetts unanimously and vigorously supported the model Commission form of fish and game administration[15] and urged its adoption. Such changes as were eventually adopted are discussed subsequently.

The Migratory Bird Hunting Stamp Act[16,17] required waterfowl hunters to purchase a $1.00 revenue stamp (Figure 30) in order to hunt waterfowl, with the proceeds of the sale directed towards purchase of wetlands and waterfowl production areas. The Cooperative Wildlife Research Unit program arose in 1935 at the urging of Jay Norwood "Ding" Darling (1876-1962), then-chief of the U.S. Biological Survey[18]. Acting with the partnerships of a state natural resource agency and ammunition manufacturers, a participating land grant university would be assigned a U.S. Biological Survey biologist as unit leader to develop coordinated research and to instruct and train aspiring wildlife biologists[18].

The Federal Aid in Wildlife Restoration ("Pittman-Robertson") Act of 1937[17,19] became critical to funding state research and management programs. The Act provided for an 11% tax[20] on sporting long arms and ammunition, to be returned proportionately to the states for approved projects. A particularly farsighted aspect required participating states to pass "…laws which shall include a prohibition against the diversion of license fees paid by hunters for any purpose other than the administration

Image © *U.S. Fish & Wildlife Service*

Figure 30. First federal duck stamp, 1934, designed by J.N. Darling.

of said State fish and game department". Massachusetts assented to the Act on June 7, 1938[21].

Herbert Lee Stoddard's (1889-1970) detailed monograph on bobwhite quail[22] was the first for the biology and management of a game species. The forester and ecologist Rand Aldo Leopold (1887-1948), a pioneer in the relationships between the land and wildlife, and often regarded as the "Father of Wildlife Management", set forth the clarity of his concepts in his classic 1933 text *Game Management*[23]. Writing at the peak of the Dust Bowl, in the heart of the dust-stricken area, the ecologist Paul Bigelow Sears (1891-1990) lamented the region's soil erosion and predatory farming which produced "gloomy curtains of dust" and "ruined forests, polluted streams, [and] gullied fields"[24].

One of President Franklin Delano Roosevelt's (1882-1945) "New Deal" programs, the Civilian Conservation Corps[17,25], arose in 1933 under the Emergency Work Conservation Act of 1933[26]. Designed for unemployed, unmarried young men, the C.C.C. operated from 1933-1943, planting >3 billion trees, constructing >800 parks, and fostering an appreciation of the outdoors and natural resources. In Massachusetts, there were 68 camps with ≈100,000 men hard at work in the state forests and other rural sites[27].

Although there were now federal laws regulating waterfowl harvest, the bleak years of the Dust Bowl affected precisely those parts of North America which were the most productive waterfowl breeding areas[17]. John C. Phillips and Frederick Charles Lincoln[28] (1892-1960) bluntly stated "No problem to-day so vitally affects the future of our wild waterfowl as the drainage of swamps and marshes. Also no policy…is frequently so utterly fallacious"[29]. In 1930, sportsmen formed the "More Game Birds in

America" Foundation, directing its principal attention to waterfowl production areas, especially "…a program which will bring neighboring nations of the North American continent into harmonious accord for the good of the game"[30]. In 1937, the Foundation was broadened and reorganized as "Ducks Unlimited"[17], which became the world leader in waterfowl and wetlands conservation.

The first North American Wildlife Conference—then titled "Wildlife Restoration and Conservation"—was called into session by President Roosevelt in February 1936 to "…bring together individuals, organizations, and agencies interested in the restoration and conservation of wildlife resources"[31]. This conference, now the "North American Wildlife and Natural Resources Conference" continues annually under the oversight of the Wildlife Management Institute. The same year, Reuben Edward Trippensee (1894-1997)[32], a forest ecologist and zoologist[33], was appointed to the faculty of Massachusetts State College (now the University of Massachusetts). The first PhD. in his Department, and the leader of the first graduate program, Trippensee saw his role as improving land use through applied ecology and in doing so to identify future fish and wildlife management needs.

The Wildlife Society (the professional society for wildlife biologists) came into being at the Second North American Wildlife Conference in 1937[34,35], as did its professional *Journal of Wildlife Management*. In Massachusetts, there were then four "full" (including Phillips and Trippensee) and six "associate" charter members[36], including one employee of the Division of Fisheries & Game and one future employee[37].

1930[38]: In reviewing the history of the Division, Director Adams remarked that "…the health-giving recreation of pursuit and the moral development wrought through the enjoyment of other species of wild life not classed as game…promotion of a healthy and inspiring environment and contentment of our people is an important function of government…". It appears "reasonable to emphasize the need of additional appropriation" to assist in administering the 60% of our wildlife in which the people at large are interested.

——The county sportsmen's leagues have selected delegates to represent their respective counties in a Council of Sportsmen's Clubs of Massachusetts. This is a more desirable form of organization than could be set up by legislation. The Massachusetts Fish and Game Association also rendered valuable service.

——A new position relative to the Supervisor of fish and game permits and claims was created due to the substantial increase in applications. Stream surveys were being initiated.

——There were 350,318 brook trout; 30,200 brown trout; 256,765 smallmouth bass; 47 largemouth bass; 84,140 yellow perch; 186,432 white perch; 306,850 bluegills; 175,355 black crappie; 331,565 horned pout; 20,230 pickerel; 25,000 muskellunge [fry]; 733 "sunfish"; and 12 walleye stocked, as well as 13,300 crayfish and ≈276,000 "tadpoles and shiners".

——There were 18 ruffed grouse—received by gift from Alberta—liberated on Martha's Vineyard in December 1929 and a second lot of 21 in February 1930. There appeared to have been "no benefit" from the stocking. Captive-raised quail (15 pair) were liberated on Nantucket, where they have become "extinct". A few broods were seen. The number of breeding woodcock was on the increase and there was a strong increase in wood duck.

——Eight Kansas jackrabbits were also liberated on Nantucket, where the animal was "somewhat" established from stockings many years ago. A request was received for stocking muskrats on Nantucket, but it was denied due to opposition from cranberry bog owners.

——Gulls and terns were holding their own, although the Penikese colony was thriving.

——Game breeding procedures have advanced[39] and bobwhite were successfully bred at all four game farms this year. Experimental work with ruffed grouse breeding was underway at East Sandwich.

——There were also 4041 pheasant, 39 ruffed grouse, 30 quail, 457 cottontails, and 1911 white hare liberated.

——Legislation included a recodification of the inland fish and game laws[40]. Principal changes included an increase in license fees; authorization to acquire public fishing grounds, when monies are so appropriated; requiring a sporting license to fish in any inland waters; requiring hunters to make a written annual report; requiring the registration of all permanent gunning stands; prohibiting the baiting of all wild birds; prohibiting the discharge of firearms within 50 yards of a state highway; and providing for a 7-month dog training period. There was also a law enacted by initiative petition[41] prohibiting the use of any trap not designed to take an animal alive and unhurt, except within 50 yards of a building or cultivated plot of land.

1931[42]: After 18 years of service, Director Adams resigned from the Division effective July 1, to take a similar position in New York. He was replaced as Director by Chief Warden Raymond Joseph Kenney (1898-1963), a 13-year veteran (Table 2). An unofficial advisory council to the Director was created.

——Due to overcrowding, the Department of Conservation moved to quarters on Somerset Street, owned by the Metropolitan District Commission, thereby requiring the Division to pay an annual rental of $6095.

——An investigation was being made to find ways and means of charging people who receive special services from the Division. Work continued on stream surveys and the evaluation of game covers. The experimental planting of wild duck foods continued along the Sudbury River.

——An appropriation of $25,000 was secured for establishing public fishing grounds[43] and rights along the Westfield River were secured.

——The trout stocking policy was again amended and brook trout were now to be distributed when a portion reached legal length and a "substantial part" of the remainder reached 4-6 in. length. Brown and rainbow trout continued to follow the previous standard. There were 446,600 brook trout; 100,525 brown trout; 2400 rainbow trout; 43,000 Chinook salmon; 1375 landlocked Sebago salmon (i.e., landlocked Atlantic salmon from Sebago Lake, Me.); 47,720 smallmouth bass; 21 largemouth bass; 222,500 yellow perch; 86,355 white perch; 230,130 bluegills; 14,480 black crappie; 269,150 horned pout; 14,510 pickerel; 250,015 walleye [fry]; 12,500 muskellunge [fry]; 2190 sunfish; 240 shiners; 2750 crayfish; and 284,000 tadpoles distributed.

——Fifteen sharptailed grouse from Alberta were liberated privately in Quissett. Grouse stocking on Martha's Vineyard was unsuccessful. Game farm quail (n=37) were again liberated on Penikese.

Photo © A.O. Gross

Figure 31. The last Heath Hen, Martha's Vineyard, April or May 1930.

——The last living heath hen "Booming Ben" (Figure 31) was seen occasionally in 1931. The former heath hen reservation was turned over to the Division of Forestry and will be closed to all hunting until it is certain that no heath hen remains alive. Special care will be taken to prevent forest fires on the area.

——Common and roseate terns had a very satisfactory breeding season on Penikese. A constant patrol was needed to warn away visitors who seek to land and recreate on Penikese.

——There were also 6692 pheasant, 2872 quail, 290 cottontails, and 3626 white hare liberated.

——Four Canada lynx were allegedly taken by hunters.

——Legislation included further authorization for the killing of gulls and terns defiling water supplies[44]; an amendment to the "Blue Laws" (c. 136) to allow recreational fishing on Sunday[45]; giving the assent of the Commonwealth to the acquisition of game refuges by the federal government[46]; provision for a reduced-price minor fishing license and free licenses for persons over 70[47]; allowing field trials[48]; authorization for the killing of predatory animals and possession of firearms for that purpose on Sunday[49]; and an omnibus bill[50] including an authorization to acquire public shooting grounds, provision for certain night hunting, setting the rules and regulations for fishing, and a change in license fees.

1932[51]: The work of the Division was divided into seven bureaus for efficiency and economy. No additional land will be purchased until all of the existing four game farms and six hatcheries have been brought to maximum production.

——License receipts for 1932 were down $20,164, undoubtedly a direct result of the prevailing economic conditions. The new licensing system in effect in 1933 will eliminate sporting licenses and restore separate hunting and fishing licenses.

——The fish and game organizations of the state include only a small portion of the licensed sportsmen but are of great benefit to the Division. During the past year, deer carcasses confiscated from illegal or accidental kills were given to the state welfare boards, which benefitted 110 needy families.

——The Supreme Judicial Court upheld the constitutionality of the "so-called humane trapping act".

——Much work was done in the hatcheries to sterilize pools and buildings against a recurrence of furunculosis. A process was developed to disinfect brook trout eggs. The stream surveys are well underway in collecting data of a biological and practical nature.

Photo © Edwin P. Simpson

Figure 32. Civilian Conservation Corps camp, Harold Parker State Forest, North Andover, 1933.

——There is a 64-mile strip on the three branches of the Westfield River for public fishing ground. Leases have also been acquired along the Squannacook and Farmington rivers. However, landowners were not conductive to granting significant leases on the Konkapot River.

——There were 938,030 brook trout; 69,150 brown trout; 71,855 rainbow trout; 48,275 Chinook salmon; 39,220 smallmouth bass; 1689 largemouth bass; 383,310 yellow perch; 54,515 white perch; 127,310 bluegills; 42,225 black crappie; 328,590 horned pout; 14,317 pickerel; 225,000 walleye [fry]; 25,000 muskellunge [fry]; 6471 sunfish; 600 suckers; 3000 crayfish; and 53,755 tadpoles distributed.

——Representatives from Massachusetts testified before Congress that the waterfowl regulations of the Bureau of Biological Survey were unsatisfactory to the sportsmen of New England. They were successful in obtaining a revision allowing a 2-month season.

——There were 17,437 pheasants, 5766 quail, 547 cottontails, and 4142 white hare distributed.

——The sole surviving heath hen was last seen on March 11, 1932. There was a private proposal to introduce prairie chickens to Martha's Vineyard but the request has been denied. The tern breeding season on Penikese was a poor one; however, the herring gull colony was increasing.

——Legislation included an authorization for the hunting of quail in Norfolk County[52]; an authorization for the Director to regulate open seasons and bag limits for ruffed grouse and quail[53]; a provision for a year-round dog training season[54]; a prohibition on the hunting or taking of beaver[55]; a provision for a 2-week open season on deer in 4 counties, and one week elsewhere and allowing the use of archery tackle for deer hunting during the firearms season[56]; and a change to the hunting, trapping, and fishing license fees[57].

1933[58]: The year was "memorable as marking the beginning of a great readjustment era" accompanied by a decrease in the inland fish and game appropriation, making strict economy essential. For the past two years, the Division was level funded. However, the Division received $100,700 from the U.S. Civil Works Administration to

complete final construction at game farms and hatcheries and development of sanctuaries. Also, the Civilian Conservation Corps has been building fishing ponds on the state forests and working on fish hatching and rearing facilities (Figure 32). Funds were also made available for making large purchases of fish and game from private breeders, thus helping to sustain those businesses.

——The organized sportsmen may seek to have the warden force paid from funds separate from those of the Division for fiscal reasons. The Division reviewed the impact of the new licensing structure in effect in 1933 and will make further recommendations.

——The unofficial advisory council created in 1931 was reorganized by Governor Joseph Buell Ely (1881-1956). It now consists of representatives from the Massachusetts Fish & Game Association, Council of Sportsmen's Clubs, Massachusetts Audubon Society, Federation of Bird Clubs of New England, Massachusetts State Grange, and the Massachusetts Farm Bureau.

——There are 215 sportsmen's clubs, 11 county leagues, and 28,254 members in the state council. However, there are ≈121,250 licensed sportsmen.

——Stream surveys were continuing as intensely as possible. An investigation began as to reasons for the decline of eelgrass[59], and its effects on brant, along the Massachusetts coast. Disinfection against furunculosis continued at the hatcheries.

——There were 796,365 brook trout; 107,670 brown trout; 45,430 rainbow trout; 17,000 Chinook salmon; 140,180 smallmouth bass; 258,920 yellow perch; 198,905 white perch; 31,680 black crappie; 213,015 horned pout; 8100 pickerel; 500,000 walleye [fry]; and 20,000 muskellunge[fry] distributed.

——Blackhead appeared in quail at the Sandwich Game Farm. Deer were increasing on Nantucket and there was considerable damage to gardens and ornamental foliage.

——There were 16,387 pheasants, 5919 quail, 1649 cottontails, and 5251 white hare distributed.

——Leach's storm-petrels were found nesting on Penikese[60]. Substantial work was done on the Boxford Sanctuary in clearing roads and trails and planting shrubs. Rat poisoning continued on Milk Island.

——Legislation included a provision for legal protection for all birds except the English sparrow, grackle, starling, crow, jays, accipiters, and the great horned owl[61], a revision to the trapping law to prohibit all traps except those designed to take an animal alive and unhurt, except by a property owner or designee[62], and a recodification of the marine fisheries laws[63].

1934[64]: A review of the activities of the Division showed a wide range of public services rendered. The original purposes of the agency have gradually been expanded so that it is no longer a single-focus entity simply providing facilities for the sportsman. License revenue should be devoted solely to improving hunting and fishing conditions and other funding received for the "broad and diversified field of services" performed by the Division.

——A program of fish and game development should include leasing, purchase and maintenance of woods and waters, expanded fish and game propagation, increased law enforcement, accelerated research, and extensive field work.

——The Civil Works Administration provided employment to 966 people for Division activities from December 1933 to May 1934.

——Carp and suckers were determined to be detrimental to the more valuable species of fish and permits were given to two businesses to remove these fish from the Housatonic River, Laurel Lake, and several water bodies in northeastern Massachusetts.

——There were 989,815 brook trout; 153,020 brown trout; 107,980 rainbow trout; 48,975 Chinook salmon; 20,550 smallmouth bass; 1317 largemouth bass; 160,470 yellow perch; 142,890 white perch; 205,100 bluegills; 3260 black crappie; 80 rock bass; 396,480 horned pout; 24,200 pickerel; 500,000 walleye [fry]; and 20,000 muskellunge [fry] distributed.

——A cooperative program between the Division and the Massachusetts State College was formulated. One initial project was an experiment in ruffed grouse propagation.

——Importation of white hare from Maine was terminated due to a report of tularemia in that state. Several hundred cottontails were received from Vermont[65] in the spring of 1934. More were requested but trapping conditions were unsatisfactory. The program of wildlife management on state forests is of great benefit to the sportsman.

Photo © *Manomet Observatory for Conservation Sciences*

Figure 33. State Ornithologist Joseph A. Hagar.

——There were also 18,920 pheasants, 5571 quail, and 2010 cottontails distributed.

——Joseph Archibald Hagar (1896-1989)[66] (Figure 33) was appointed provisionally as the state ornithologist effective November 7, 1934. His first duty will be to study the relationship between waterfowl and the shellfish industry.

——There was a large colony of terns on Ram Island. Terns nested in large numbers on Penikese. Herring gulls were also very abundant and the Bureau of Biological Survey destroyed many nests to limit the hatch.

——Legislation included changes to the minimum length for northern pike and muskellunge[67], a prohibition on the sale of black bass wherever taken[68], an amendment to the so-called "Blue Laws" (G.L. c. 136) to allow trap and target shooting on Sunday, with the permission of selectmen[69], establishment of the state ornithologist in the Division of Fisheries & Game[70], changes to the season dates and bag limits for rabbit and hare in Dukes and Nantucket counties[71], and a provision for a local option relative to the anti-steel trapping law[72].

1935[73]: There are now four bureaus in the Division: Administration, Marine Fisheries, Wildlife Protection, and Hunting & Fishing. The wardens received their first official uniforms on May 16 (Figure 34). The uniforms are to be worn on most occasions to increase respect for the officers and their duties.

There were 12 projects totaling $13,789 (in state funds) to be submitted to the Works Progress Administration for cooperative funding. The state ornithologist qualified on the civil service examination and was made permanent in July. The financial outlook

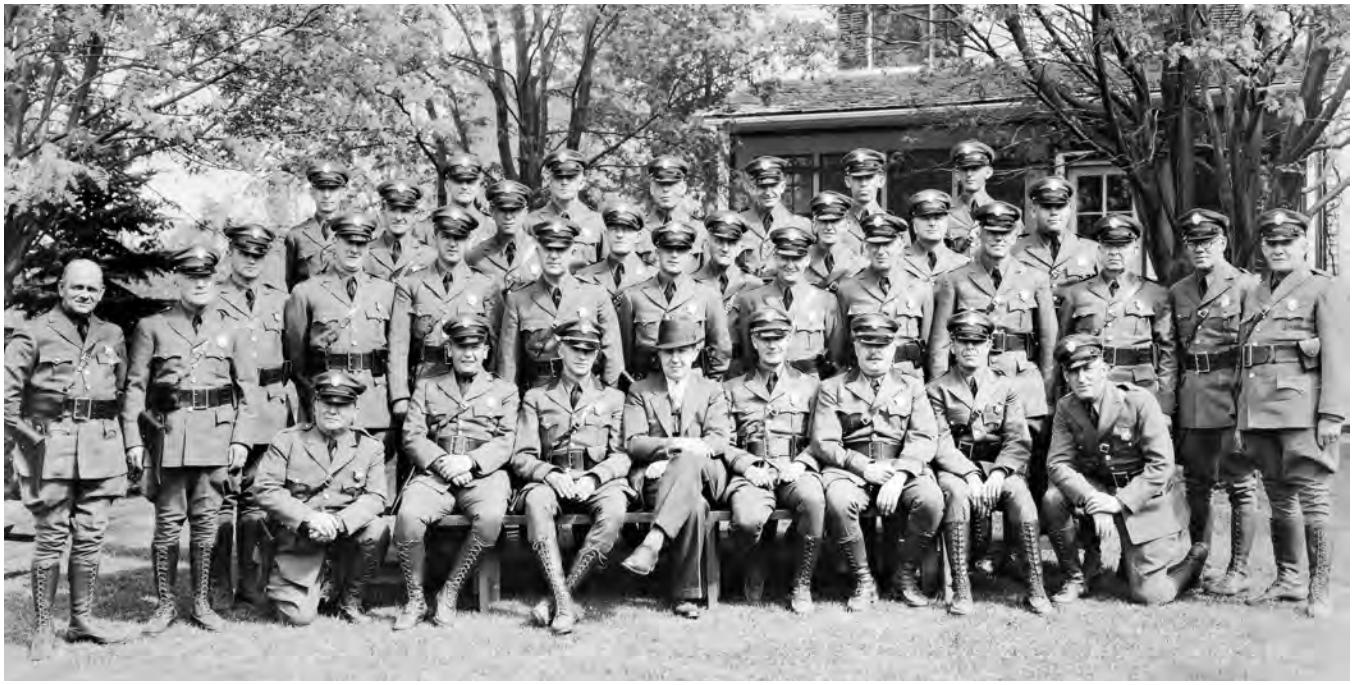

Photo © *MassWildlife*

Figure 34. Massachusetts Conservation Officers, 1935.

for the Division was improved by the appropriation of $18,000 in a supplemental budget.

——A field office was opened at Concord for the use of the stream survey unit, currently focusing on the Merrimack River system. Reference plantings of aquatic plants began at the Sutton Pond system. Experimental fish tagging was being done in Plymouth County. Tag returns have been low due to tag loss and low visibility.

——There were 622,000 brook trout; 203,995 brown trout; 136,410 rainbow trout; 39,000 Chinook salmon; 18,045 smallmouth bass; 56 largemouth bass; 253,010 yellow perch; 383,915 white perch; 54,430 bluegills; 2698 rock bass; 1506 black crappie; 136,310 horned pout; 5204 pickerel; and 250,000 walleye [fry] distributed.

——White hare will now be imported from New Brunswick. Cottontail breeding was underway at the Ayer Game Farm and the Sutton Pond system. The grouse propagation project at Mass. State College produced 115 chicks; however, difficulty was encountered in getting chicks to feed. Disease was also an issue.

——An open season on deer on Nantucket (for the first time) was authorized for February 11-15, 1935[74,75]. However, the Governor closed the season on the second day due to the substantial harvest on opening day. Two island hunters were apprehended for killing wild turkeys on the island.

——The federal government banned the use of live decoys (Figure 35) and bait for hunting waterfowl[76].

——There were 22,005 pheasants, 6376 quail, 2223 cottontails, and 707 white hares distributed.

——The ornithologist found that damage to shellfish by sea ducks was slight. However, damage by herring gulls was persistent and severe, especially on Cape Cod, Martha's Vineyard, and Nantucket. The Bureau of Biological Survey continued to destroy gull eggs by pricking. A census of seabird colonies was underway, especially with regard to least terns. The number of least terns appeared to be twice what it was in 1923.

Photo Courtesy of Ernest S. Tucker.

Figure 35. Goose hunting blind with live decoys, Essex County, about 1895.

——Legislation included provision for a 6-day February open season on deer on Nantucket[77], provision for an open season on quail in Middlesex and Worcester counties[78], authorization for the use of fish traps with an opening >1 inch for taking bait fish[79], and an authorization for trapping on Sunday[80].

1936[81]: The Division will now increase the facilities for growing brook trout and will stock as many fish of larger size as hatchery capacity allows. The distribution policy for all three species of trout will be modified to shorten the period when they are in brooks between the time of stocking and the opening of the season. This new policy will require an adjustment period.

——The question of the Division's finances was referred to a study commission. There are now county leagues in all 14 counties, representing 239 clubs and a total membership of 31,681.

——Game wardens were activated to cooperate with police, the military, and local officials during the flood emergency. The wardens also occupied much time during the severe winter engaging in the emergency feeding of wildlife, distributing 15,000 lbs. of grain and 80 bushels of waste popcorn.

——Requests for [game] propagator's permits have increased. There were 325 investigations during 1936 alone. A survey of permittees was underway to ascertain compliance with the terms of the permits. There were 130 fish breeder permits.

——The damage to trout fisheries from the spring floods was very apparent and "…several years will have to elapse before natural conditions again prevail". Stream surveys are underway in Bristol and Worcester counties.

——There were 654,460 brook trout; 209,390 brown trout; 196,170 rainbow trout; 9000 Chinook salmon; 55,025 smallmouth bass; 40 largemouth bass; 94,085 yellow perch; 116,795 white perch; 218,050 black crappie; 96,450 bluegills; 140,350 horned

pout; 9389 pickerel; 119,375 walleye [fry]; 20,000 muskellunge [fry]; 20,070 sunfish; 10,000 shiners and dace; and 750 "banded pickerel" (i.e., redfin pickerel) distributed.

——Grouse, quail and pheasant numbers were below normal levels (probably due to the severe winter) and the Director cancelled the grouse season prior to its opening. The wild turkey experiment (using pen-reared birds) begun at Beartown State Forest in the fall of 1935 continued during 1936. Student training courses in wildlife management were underway at Stockbridge School of Agriculture at the Massachusetts State College.

——Raccoon breeding began at Ayer Game Farm but there has been little progress so far. Importation of cottontails from the western states has been resumed. Rabbit breeding was also underway at Ayer. The stock included 20 does and 11 bucks of the wild-trapped Vermont stock. The "two sub-species were inimical to one another and with a single exception all attempts to cross-breed them resulted in failure and usually in the death or injury of the doe"[82].

——Deer damage claims were increasing. The most "aggravated" situation is in the area of the Watuppa Reservation, which is closed to hunting. Deer move out of this sanctuary and cause damage and then return to it.

——There were 20,620 pheasants, 8230 quail, 43 cottontails, and 6354 white hare distributed.

——Billingsgate Island (a "few acres") was gifted as a wildlife sanctuary. There was little or no money appropriated for management of sanctuaries and some were not even visited in 1936. Carr Island suffered from mouse damage to the planted mulberry and apple trees.

——It was a "banner year" for terns on Penikese with an estimated 7000-8000 adult birds and an estimated 5000 young surviving to flight stage. Other tern colonies were also doing well; that at Plymouth doubled over 1935. The Bureau of Biological Survey continued to puncture herring gull eggs at Penikese as a control measure. There were 30,000 pairs of laughing gulls on Muskeget.

——The ornithologist again attempted to investigate the relationship between sea ducks and shellfish due to the appearance of a large (30-40,000 birds) congregation of scoters and eiders off Chatham. There were 378 mostly oiled birds taken for study or depredation. Public pressure was brought to bear and the federal government revoked the Division's powers to issue depredation permits.

——Investigations regarding the status of the "duck hawk" are underway. Mount Tom was found to be an outstanding observation place for hawks and eagles.

——Legislation included abolishment of the closed season on skunks (in effect since 1934)[83], provision for a maximum of 10 hooks in ice fishing[84], abolishment of the closed season for deer in Dukes County[85], and a provision for cooperative agreements regarding fishing in interstate ponds[86]. A legislative resolve provided for a study commission to investigate the administrative functions and finances of the Division[87].

1937[88]: It is now time for a change in the pheasant stocking policy. Over the 23 years since 1915, >200,000 pheasants, mostly young birds, have been liberated. Hunting returns and field observations show both low natural production and low harvest results from liberating young birds. It was believed that a combination of heavy stocking of birds and liberating mass numbers of young birds would sustain pheas-

Photo © E.C. Ashworth

Figure 36. Wild Turkey with poults, Beartown State Forest, Monterey, June 1936.

ant hunting. This was insufficient. Natural breeding is the most important part of pheasant maintenance and the policy will now reflect substantial liberation of hens for breeding. If the stock is low in the covers, hens will be protected. Experiments with pheasant strains have shown that the pure Chinese strain is the best for Massachusetts and is now the only variety used at the game farms. Vermin numbers were high and re-establishment of pheasant populations must take place in the face of adversity.

——The federal Works Progress Administration has approved ≈$72,375 of projects for the Division's facilities, of which the state share is ≈$17,530.

——The law was amended[89] so that the appropriation for the Division must include a sum not less than the previous year's amount received from licenses, fees, and fines, and one-half the amount necessary for law enforcement. This was accomplished through the combined efforts of the sportsmen and every other "outdoors person".

——The title of the enforcement officers was changed to "Conservation Officer"[90] and town "wardens" are to be phased out. There are now two enforcement regions with a supervisor in each.

——There was a renewed interest in salmon restoration and a special Salmon Restoration Committee was appointed. The Parker River was selected as a demonstration site and arrangements have been made to obtain eggs from Canada and hatch them at East Sandwich.

——There were 717,590 brook trout; 200,270 brown trout; 96,862 rainbow trout; 34,000 Chinook salmon; 37,175 smallmouth bass; 165 largemouth bass; 82,435 yellow perch; 122,497 white perch; 57,100 black crappie; 10,335 bluegills; 293,500 horned pout; 10,860 pickerel; 500,000 walleye [fry], 20,000 muskellunge [fry]; 6225 "forage fish"; and four rock bass distributed.

——It is anticipated that "…much illegal deer hunting…will be rapidly stamped out with the advent of the so-called buckshot law[91] making it *prima facie* evidence of illegal deer hunting on the part of anyone possessing or hunting with [buckshot, etc., outside

the deer season]". Mink and otter have become recognized as the "worst enemies" in restocking ponds and streams. This is a matter which must be dealt with. Beaver continued to be a problem and cause damage wherever they appear. The wild turkeys stocked in Berkshire County appeared to be doing well (Figure 36).

——There were also 10,549 pheasants, 8622 quail, 17 wood ducks, and 3237 cottontails distributed. There were no white hares available due to a change in Maine state law which now prohibits exportation of these animals.

——Experiments in marsh restoration are underway at Duxbury Marsh. Ram Island had the greatest number of common and roseate terns ever seen there. Many of these birds may have shifted over from Penikese. Federal officials continued to puncture gull eggs at Penikese. The ornithologist continued to study duck hawks and seabird colonies and the census of waterfowl and shorebirds.

——Legislation included a prohibition on hunting on Memorial Day and Veterans Day until 1:00 P.M.[92], liberalization of the hunting opportunities on certain state lands[93], a provision for an open season on quail on Nantucket[94], a provision for the issuance of complimentary licenses[95], and an authorization for the Department of Public Works to regulate hunting on the Province Lands[96].

1938[97]: During 1938, there were 17 construction projects totaling $130,626 undertaken for the Division through the Works Progress Administration, of which the state expended $30,504 (including in-kind matches of $13,895).

——At the Boston Sportsmen's Show, for the first time, every trout in every exhibit died within 24 hours. This was due to an excess of chlorine in the system. There was a fine replica of an old-time coastal gunning stand erected at the Eastern States Exposition. However, due to flooding on the Agawam River and the subsequent arrival on September 21 of a hurricane, much damage was done to the fairgrounds and the show closed mid-week with little attendance.

——The severe hurricane forced six proclamations by the Governor, the first closing the woodlands on September 29, the second closing all hunting, fishing, and trapping seasons, and the subsequent ones modifying the previous ones, or providing for later alternate seasons. The "...entire work force in the central office had to abandon any idea of routine work to answer telephones".

——There was severe hurricane damage at Watatic Mountain, Minns, and Penikese wildlife sanctuaries. The rabbits on Penikese suffered from the hard winter and the hurricane.

——Salmon restoration continued with an investigation of conditions in the Parker River. The Director issued rules and regulations prohibiting the possession, taking, or sale of salmon taken from Massachusetts waters.

——Stream surveys were underway in the Quinebaug and Chicopee river systems.

——There were 377,160 brook trout; 256,700 brown trout; 143,280 rainbow trout; 25,500 Chinook salmon; 48,940 smallmouth bass; 612 largemouth bass; 203,575 yellow perch; 115,455 white perch; 147,250 black crappie; 4100 bluegills; 326,425 horned pout; 4800 pickerel; 500,000 walleye [fry]; 50,000 muskellunge [fry]; 247 sunfish; and 18,825 forage fish distributed.

——There was an extraordinary fall flight of both green-winged and blue-winged teal, the like of which had not been seen for thirty or more years.

——Wild turkey nests at Beartown State Forest increased from three to six between 1937-38. An experimental stocking of five pairs of chukar partridge was made at Beartown and a setting of 11 eggs was received from a donor. Progeny from these eggs will be used to continue the experiment.

——There were also 13,825 pheasants, 19,680 quail, three ruffed grouse, 8270 cottontails, 3429 white hare, and 58 raccoons stocked.

——There were nine Canada lynx reported taken, but this may have been an error as some large "bay lynx" [as in past years] could be mistaken for the Canada lynx (Figure 37). Similarly, a number of persons brought in "extra large wild hunting house cats" in the belief that they are "wild cats".

——Experimental plantings of widgeon grass were made in the Duxbury Marshes and on Red Brook in East Wareham.

——The state ornithologist began a 5-year study of the Canada goose and black duck, approved under the new Pittman-Robertson Act.

Photo © *Mass Wildlife*

Figure 37. "Bay Lynx" (30 lbs.) killed near Taunton Reservation, November 1919.

——Legislation included an authorization for cities and towns to appropriate monies for stocking fish and game[98] and a prohibition on setting of open-air fires except on snow-covered ground[99]. A legislative resolve called for a survey and study of the fish and game laws[100].

1939[101]: The Department of Conservation was reorganized August 12, 1939, and now consists of the Divisions of Fisheries & Game, Forestry, Marine Fisheries, Parks & Recreation, and Wildlife Research & Management[102]. However, in a functional sense, the work will carry on under the former agencies under temporary directors until January 1, 1940. Regulations promulgated during the report period must now be printed in an agency's Annual Report[103]. The ornithologist was designated Director of the new Division of Wildlife Research and Management.

——Stream surveys continued on the Chicopee, Housatonic and Quinebaug river systems.

——Research work continued on developing certain coastal streams for the Atlantic salmon. A survey of the streams tributary to the Merrimack River was conducted. There were ≈13,360 2-year-old and ≈85, 840 fingerlings reared at East Sandwich set aside for stocking in 1940.

——There were 752,050 brook trout; 387,550 brown trout; 135,025 rainbow trout; 5000 Chinook salmon; 55,910 smallmouth bass; 230 largemouth bass; 156,000 yellow perch; 79,300 white perch; 26,490 bluegills; 180,420 black crappie; 852,030 horned

pout; 3079 pickerel; 500,000 walleye [fry]; 50,000 muskellunge [fry]; 25 sunfish; and 1700 “forage fish” distributed.

——The state assented[21] to the new Federal Aid in Wildlife Restoration Act and several projects were underway, the first of which pertained to waterfowl[104]. Another anticipated project will relate to the development of wildlife areas on state forests. The Commissioner of Conservation opened all state forests to hunting without a permit, except three which have donor restrictions.

——Experiments in cottontail breeding were discontinued as have the attempts with Reeves pheasants. Raccoon breeding suffered a major setback due to an epidemic of a “form of distemper” which killed 68 of 95 animals.

——Ducks and geese appeared to be on the increase. Beaver were expanding their range in Berkshire County. Opossum were now showing up in the game harvest reports and some are being taken throughout the state. Protection will doubtless be extended soon to this animal.

——There were 23,191 pheasants, 10,059 quail, eight Reeves pheasants. 230 cottontails, and 7706 white hare liberated. There were 66 chukar partridge on hand at the Sandwich Game Farm.

——Ram Island was covered with 14 feet of water during the hurricane, but this spread the sand around and the 1939 nesting season was one of the best ever. No owl depredation occurred this year. There was substantial hurricane damage to Penikese and clean-up work continued until spring. The herring gulls took over a certain peninsula formerly used by terns.

——No legislation pertaining to fisheries and game was enacted, other than the recodification.

THE WAR YEARS AND THE AFTERMATH: 1940-1947.

The 1940s were dominated by World War II, the greatest conflict the world has ever known[1], costly in blood and treasure. However, the depressed national economy was boosted as industry geared up to produce war matériel and facilities. Scientists split the atom, leading to the beginning of the nuclear era in 1945. The “ABC” computer (1942) started the advance towards astonishing analytical power. The United Nations[2] was founded (1945) and the European Recovery Plan (1947) began the reconstruction of Europe. More than 1 million returning American veterans took advantage of the Servicemen’s Readjustment Act (“G.I. Bill”)[3]. The “baby boom” commenced (1946), accompanied by the rise of the suburbs and the greatest housing boom in U.S. history.

In Massachusetts, hungry workers found employment in the construction and expansion of Camp Edwards, Fort Devens, and other military facilities. The Fore River shipyard (1883-1986) in Quincy gained Navy contracts and boosted employment, producing >36 major combat ships, including the battleship U.S.S. *Massachusetts*. The war also fueled demand for the state’s electrical industries and research facilities focus-

ing on the applied sciences[4]. The Commonwealth also experienced the disastrous Cocoanut Grove fire in Boston (1942) and the fierce hurricane of 1944 and the "Massachusetts State College" transmuted into the "University of Massachusetts" in 1947.

Adolph Murie's (1899-1974) meticulous field work on coyotes[5] contradicted the common view of the animal as an "archpredator"[6]. This study, along with Murie's later publication on the wolves of Mt. McKinley, caused the National Park Service to terminate predator control at the two parks.

Photo © *MassWildlife*

Figure 38. Bird hunting at Charlton Depot, Charlton, 1920s.

The American Committee for International Wild Life Protection[7], following Hornaday's earlier plea for rare species, published *Extinct and Vanishing Mammals of the Western Hemisphere*[8] in 1942. Although largely focused on large charismatic species, the book also included various bats, mice, and marine mammals. The conservationist and naturalist Ira Noel Gabrielson (1889-1977)[9] built upon the ideas of his friend Aldo Leopold to encompass a broad ecological frame of mind: "…from the purely biological point of view there are no beneficial and no harmful plants or animals"[10]. Gabrielson also emphasized land protection, adding millions of acres to the National Wildlife Refuge system while extolling its purposes and values[11].

Writing nearly 350 years after Gosnold's brief foray into Massachusetts, Aldo Leopold expounded on the values of wildlife in American culture[12,13]. He identified three cultural values: (1) stimulus of the awareness of American history, (2) renewing an awareness of the soil-plant-animal-human food chain, and (3) recognizing human complicity in the destruction of natural resources, which can only be remedied by extending the human system of ethics to that of "man-earth". "Wildlife once fed us and shaped our culture. Reaping it by modern mentality would yield us not only pleasure, but wisdom as well"[12].

The professor and essayist Havilah Babcock[14] (1898-1964) and the sportsman Burton Lowell Spiller[15] (1886-1973) both eloquently expressed the satisfaction and joy of spirit surrounding days afield with well-trained bird dogs (Figure 38), grouse bursting from the alders, quail scattering from sandhill coverts, and the crispness of a sunlit fall day. Aldo Leopold, too, used evocative language and imagery[16] to describe his own process of intellectual development. To him, the land ethic and an ecological attitude was both an intellectual and an emotional process[17] which ultimately chose geese and pasque-flowers over technological innovation.

In the post-war immediacy, and following up on Paul Sears' dire predictions of soil depletion, two more writers despaired of our poor stewardship of the land, casti-

gating people as destroyers and exploiters. The ecologist William Vogt's (1902-1968) provocative and then-influential book *Road to Survival*[18] linked environmental problems with human overpopulation[19]. Fairfield Henry Osborn, Jr. (1887-1969), conservationist and long-time President of the New York Zoological Society, also saw people as banes, lambasting "...the accumulated velocity with which [they are] destroying their own life sources". Osborn concluded that "Man must recognize the necessity of cooperating with nature...The time for defiance is at an end"[20].

In 1940, Congress enacted the Bald Eagle Protection Act[21] "whereas the bald eagle is no longer a mere bird of biological interest but a symbol of the American ideals of freedom...[and] is now threatened with extinction". The Act initially protected the eagle only in the 48 states; thus, Alaska continued to bounty bald eagles for 19 years until attainment of statehood in 1959[3]. The statute was amended in 1962 to include golden eagles. The forward-looking, but largely only urging, Fish and Wildlife Coordination Act of 1934[22,23] was amended in 1946 to require all new federal water projects to include provisions to prevent or minimize effects on fish and wildlife and to consult with the appropriate state agenc[ies].

The first apparent record of opossum in Massachusetts was ≈1899 in Haverhill[24]. By 1944, they were widespread from Dalton to Falmouth[25], although still somewhat uncommon.

1940: The reorganization enacted in 1939 did not become fully effective at the Department level until May 1940. However, the Divisions of Fisheries & Game[26] and Wildlife Research & Management[27,28] had their directors confirmed earlier.

——The Division of Fisheries & Game sold a combined total of 177,551 hunting, fishing, and trapping licenses during calendar 1939.

——Headwaters and feeder streams in 71 areas were being used as nurseries for the hatching of eyed trout eggs.

——There were 75,779 Atlantic salmon reared at the East Sandwich hatchery and stocked in two rivers in Essex and Plymouth counties and five ponds in Berkshire, Essex, and Hampden counties.

——There were [excluding most fry and eggs] 321,450 brook trout; 259,464 brown trout; 198,880 rainbow trout; 61,830 smallmouth bass; 1232 largemouth bass; 182,710 yellow perch; 147,534 white perch; 72,470 black crappie; 3703 bluegills; 284,250 horned pout; 3120 pickerel; 500,000 walleye [fry]; 50,000 muskellunge [fry]; 50 sunfish; and 25 forage fish distributed.

——There were also 28,100 pheasant, 9807 quail, 150 chukar partridge, 200 cottontails, and 5991 white hare distributed.

——The duties of the new Division of Wildlife Research & Management are: (1) to carry out the duties and activities of the ornithologist, (2) administer projects approved under the Federal Aid in Wildlife Restoration Act, and (3) oversee and manage wildlife sanctuaries. Federal Aid projects now underway included waterfowl research, pheasant research, and development of state forest sanctuaries.

——There was no new legislation in 1940 due to implementation of the biennial legislative sessions.

1941[29]: Stream surveys continued on the Millers and Greenfield systems and part of the Chicopee and Connecticut.

——There were 25 adult Atlantic salmon still remaining at the East Sandwich hatchery.

——There were ≈1,650,000 brook, 1,325,000 brown, and 545,000 rainbow eyed eggs planted for breeding purposes in 82 streams in 10 counties.

——There were 568,370 brook trout; 241,850 brown trout; 235,600 rainbow trout; 94,480 smallmouth bass; 180 largemouth bass; 216,125 yellow perch; 207,110 white perch; 247,120 black crappie; 112 bluegills; 294,080 horned pout; 15,460 pickerel; 500,000 walleye [fry]; 50,000 muskellunge [fry]; 125 rock bass; and 91,980 forage fish distributed.

——There were 32,720 pheasants, 12,190 quail, 65 chukar partridge, 492 cottontails, 920 white hare, and 22 raccoons liberated.

——Legislation included a repeal of the statute requiring Nantucket to appoint a special warden for Muskeget Island[30], a prohibition on the taking of fish from Big Homers Pond other than by fly fishing[31], a prohibition on intoxicated persons carrying firearms in areas where hunting is allowed[32], further restrictions on the possession of certain shotguns and cartridges in the nighttime[33], and a recodification of Chapter 131[34], and further definitions of “birds” and “mammals”[35].

1942[36]: Some personnel entered military service and 12 conservation officers were transferred to the M.D.C. for two months for special guard duty at reservoirs.

——Two [fish] salvage units were discontinued due to lack of funds.

——Stream surveys were conducted on the Deerfield and Westfield rivers and an experimental creel survey on the Quaboag[37]. Britton Charles McCabe (1901-1968) completed his dissertation[38] on the stream fishes of western Massachusetts, which constituted the first comprehensive fish survey in the state.

——For the first time (due to the recodification) all fishing except black bass opened on April 15. This met with the approval of most sportsmen. Remote ponds and streams saw a decline in usage due to the rationing of tires and gasoline.

——There were ≈2,185, 000 brook, brown, and rainbow trout eyed eggs planted in 117 brooks and streams in 10 counties. There were 24 fingerling and 24 adult Atlantic salmon remaining at the East Sandwich Hatchery.

——There were 577,250 brook trout; 323,730 brown trout; 457,649 rainbow trout; 149,800 smallmouth bass; 599 largemouth bass; 116,440 yellow perch; 48,960 black crappie; 10,000 rock bass; 5350 bluegills; 65,230 horned pout; 21,420 pickerel; 50,000 walleye[fry]; and 5055 forage fish distributed.

——There was a sharp drop in the deer harvest for 1941 (n=1773) as compared to 3067 in 1940. This was attributed to very poor hunting conditions.

——There were 25,946 pheasants, 7419 quail, 33 cottontails, 4732 white hare, and 41 raccoons distributed.

——The Division of Wildlife Research & Management published the first[39] in its series of “Research Bulletins”[40]. This Division also conducted a survey of waterfowl and a

study of black duck food habits.

——There was no new legislation due to the biennial sessions of the legislature.

1943[41]: Due to entry into military service, reassignments to reservoir guard duty, and a job freeze, there were only 20 conservation officers assigned between February and April 1943, when the guard duty was taken over by another force.

——The winter of 1942-43 was severe with snow and freezing conditions extending late into the spring. The stream surveys were not conducted due to the project leader's entry into the Armed Forces. Feeder streams (breeder areas) were not stocked with trout eggs.

——There were 233,925 brook trout; 85,560 brown trout; 113,220 rainbow trout; 10,675 smallmouth bass; 2970 yellow perch; 4911 white perch; 6350 black crappie; 448 horned pout; and three pickerel distributed.

——There were 17 fingerling and six yearling Atlantic salmon remaining at the East Sandwich Hatchery.

——There were 789 pheasants, 149 quail, and 39 raccoons liberated.

——Legislation included changes to the open seasons and bag limits for raccoons and opossums[42]; provisions for the sale of heads, hides, and hoofs of deer to certain persons[43], provisions for the issuance of free licenses to persons over 70 or under 70 when receiving old age assistance[44], and provisions for free or reduced-price licenses to persons in the military or naval service[45].

1943-44[46]: The shortage of conservation officers and the enlargement of districts required temporary concentrations of officers to address particular regional problems.

——The hatcheries and game farms were operating on a skeleton basis. There was no salvage work conducted due to drastic cuts in appropriations. Feeder streams were not stocked.

——The stream survey was resumed in June 1944 and will be reported in the 1945 report. One crew will now be in the field under the supervision of Dr. Britton McCabe.

——Due to gasoline rationing, only those streams easily accessible by public transportation were stocked. Those anglers who did fish reported especially fine trout fishing.

——There were 249,040 brook trout; 137,245 brown trout; 98,555 rainbow trout; 347,655 smallmouth bass; 93,649 yellow perch; 3340 white perch; 10,400 black crappie; 105,565 horned pout; and 16,820 pickerel distributed.

——There were 17 fingerling and five yearling Atlantic salmon at the East Sandwich Hatchery.

——The upland game season was satisfactory from the sportsman's view. There were fewer hunters afield than in the past, but those who did hunt secured larger bags. The fur take was substantially down.

——There were 13,205 pheasants, 3895 quail, 100 cottontails, and 87 raccoons liberated.

——There was no legislation due to the biennial sessions of the legislature.

Photo © *MassWildlife*

Figure 39. Deer hunters retrieving a buck taken in central Massachusetts.

1944-45[47]: The conservation officers continued to operate on a reduced force of 29. There were 26 deputies employed intermittently between October and December during the peak of the hunting season.

——No additional areas were set aside as trout breeder areas or stocked with eggs.

——Pond surveys were conducted in Worcester County in summer and fall 1944 and a creel census was conducted on five lakes. Additional water bodies in Worcester County are now being surveyed.

——The trout season opened under "…probably the most ideal conditions in the memory of most anglers". However, snow in May and heavy rains in June resulted in flooding which seriously affected fishing conditions.

——The Sutton Hatchery was not in operation during this fiscal year. There were 493,130 brook trout; 155,365 brown trout; 102,985 rainbow trout; 108,025 smallmouth bass; 10,060 largemouth bass; 112,100 yellow perch; 2250 white perch; 40,300 black crappie; 274,900 horned pout; and 9050 pickerel distributed.

——Deer were abundant in all counties open to hunting (Figure 39). Due to the 1938 hurricane, deer appeared to have "migrated east" from the western counties resulting in a more even distribution throughout the state.

——The upland game season was very satisfactory but showed a concentration in the areas nearest to thickly settled localities, due to gasoline rationing

——There were 17,632 pheasants, 4474 quail, and three raccoons stocked.

——The Robson Wildlife Sanctuary in Westfield and Montgomery was received by gift from Grace A. Robson[48].

——Legislation included a definition of the term "loaded shotgun or rifle"[49], a prohibition of the sale to or possession by certain minors of firearms and ammunition[50], a

Photo © *MassWildlife*

Figure 40. Phillips Wildlife Laboratory complex, Upton State Forest, 1945.

season closure on wood duck[51], and the provision for a 1-year open season[52].

1945-46[53]: The Director planned to establish an Advisory Committee, representing each of the sportsmen's County Leagues, to meet with him at regular intervals. The conservation officers filled most vacancies, bringing the total to 33 of the 35 authorized.

——The Inland Fisheries and Game Fund was legislatively established[54] effective July 1, 1945, providing that all revenue received in license fees and miscellaneous revenue be devoted exclusively to fish and game. The starting balance in the fund was $332,236.29, which increased to $536,418.86 by June 30, 1946.

——In 1945, the Division of Wildlife Research & Management occupied part of the former C.C.C. Camp SP-25 in Upton for use as a research facility[61] (Figure 40). The facility was named the John C. Phillips Wildlife Research Laboratory.

——During the past year, there was an increase of 70,000 sportsmen, necessitating a "well-planned and consistently executed long-range program of conservation…". The Division inaugurated a long-range program with the goal of stocking 1 million legal-sized trout, 1 million pond fish of "desirable species", a combined stocking of 50,000 pheasant and quail, and an intensified scientific research program.

——Moving pictures of the Division's activities were being made in furtherance of its educational activities.

——Stream surveys continued and Worcester County was being completed[55]. Surveys in Middlesex County were underway and a creel census was implemented on the upper Deerfield River.

——[Fish] salvage work resumed with four crews, but started later than desired due to a shortage of equipment.

——The weather was very cold on the opening day of fishing season, and, although the "usual number" of anglers was out, very few fish were taken. May was one of the rainiest months on record, causing streams to remain at near flood level.

——The Sutton Hatchery reopened in April 1946 and some improvements were made. There were 449,725 brook trout; 182,700 brown trout; 838,250 rainbow trout; 2768 smallmouth bass; 313 largemouth bass; 136,050 yellow perch; 152,114 white perch; 38,260 black crappie; 520 bluegills; 286,745 horned pout; 7927 pickerel; 300 sunfish; and 300 forage fish distributed by the hatcheries and pond crews.

——The removal of gasoline rationing resulted in a better distribution of hunters during the upland season.

——There was a record deer kill in 1945, totaling 3567 (1912 bucks and 1655 does). The section adjacent to the Quabbin was "especially productive" due to the overflow from the "vast" Quabbin sanctuary.

——There were 19,273 pheasants, 2881 quail, and 493 white hare stocked.

——Legislation (annual sessions were resumed) included a prohibition on the use of artificial bait for most ice fishing[56], a removal of the restriction in the "Blue Laws" relative to hunting on Veterans' Day[57], a prohibition on the use of machine guns for hunting[58], and the opening of parts of the Quabbin Reservoir to shore fishing[59].

Photo © *Mass Wildlife*

Figure 41. Phillips Wildlife Laboratory project leaders, 1945. Left to Right: Winston S. Saville, Robert L. Jones, George F. Pushee, Mason Belden, Gordon T. Nightingale, Robert H. Johnson, John Anderson.

1946-1947[60]: Pond surveys were underway in Plymouth County. Albert H. Swartz has returned from military service and is now in charge of the survey. Wildlife research projects were pursued under the direction of the Project Leaders now situated at the Phillips Wildlife Laboratory (Figure 41).

——Salvage work continued but the shortage of equipment and personnel required the Division to combine the salvage crews.

——The 1947 fishing season was one of the poorest in years, due to heavy rains and cold weather which ruined the trout fishing. Later, hot, dry weather resulted in low water for the remainder of the year.

——There were 592,315 brook trout; 100,555 brown trout; 222,510 rainbow trout; 60,465 smallmouth bass; 4021 largemouth bass; 240,080 yellow perch; 138,162 white perch; 57,430 black crappie; 800 bluegills; 203,610 horned pout; 8105 pickerel; 30,000 walleye; 45,000 muskellunge [fry]; and 26,660 forage fish distributed.

——Wild turkeys were released in the Quabbin as a restoration experiment. There were also 30,495 pheasants, 3674 quail, 13 wild turkeys, 986 white hare, and 22 cottontails stocked.

——State Ornithologist Joseph Hagar continued his earlier peregrine falcon studies (although with lesser effort) in the post-war period. In 1947, he first found broken eggs at an eyrie[62] on Rattlesnake Hill in the Quabbin Reservation. This was the first evidence of the eggshell thinning that led to the total extirpation of the east coast peregrine population by 1964[63] and the later identification of DDT as the causative agent[64].

——Legislation included the provision for a process for the Director to revoke certain permits and licenses[65], provision for a process to provide fishing privileges for patients in veterans' hospitals[66], and a requirement for the Metropolitan District Commission to issue rules and regulations relative to fishing in the Quabbin Reservoir[67].

1947-48[68]: Surveys of ponds and lakes continued in Berkshire County. The Division purchased land along the Bungay River in North Attleborough and then conveyed the same to the federal government for use as a fish hatchery.

——There were 403,755 brook trout; 141,785 brown trout; 150,065 rainbow trout; 179,930 sockeye salmon; 1022 smallmouth bass; 500 largemouth bass; 102,875 yellow perch; 5650 white perch; 32,835 black crappie; 249,615 horned pout; and 12,980 pickerel stocked.

——The upland game season was delayed 12 days due to a fire emergency but was extended the same number of days on the closing end.

——There was again a record deer harvest, totaling 3977 (2073 bucks and 1904 does).

——Wild turkeys (n=66) were again stocked in the Quabbin Reservation but were badly affected by the severe winter. There were also 27,300 pheasants and 6012 quail stocked.

——A game cover improvement project was initiated to provide food and cover to game animals, especially pheasants, during the winter and spring months. Nine pheasant release pens and nine food patches were set up in six counties. There was severe winter damage to the pens.

——Legislation included provision for a closed season for most hunting between September 20 and October19[69]; a requirement for certain information on hunting, fishing, and trapping licenses[70]; a detailed revision of the laws regarding trapping and providing for trap registration[71]; and a reorganization of the Department of Conservation and a provision to establish the Board of Fisheries and Game[72].

THE DIVISION OF FISHERIES & GAME—THE LATER YEARS, 1948-1969:

A SUMMARY

——The Legislature created a 5-member "Fisheries and Game Board" with administrative and regulatory powers, to be appointed by the Governor for 5-year terms, with an initial staggered entry. The Board held its first meeting on October 6, 1948 and elected a Chairman and Secretary.

——The Director of Fisheries and Game (and the Superintendent of the Bureau of Wildlife Research and Management were both appointed by the Board (i.e., not gubernatorial appointments as in past years). The first Director so appointed was Robert H. Johnson (in office 1948-55), succeeded by Charles L. McLaughlin (1955-63), Francis W. Sargent (1963-64), and James M. Shepard (1964-75). Three of these left the Division for more lucrative positions and one (McLaughlin) died in office.