

Annual Report 2001



MassWildlife

MASSACHUSETTS
DIVISION OF FISHERIES & WILDLIFE

Wayne F. MacCallum
Director

Jack Buckley
Deputy Director
Administration

Carl Prescott
Deputy Director
Field Operations

TABLE OF CONTENTS

The Board Reports	5
Fisheries	8
Wildlife	20
Natural Heritage & Endangered Species Program	28
Information & Education	36
District Reports	43
Wildlife Lands	48
Federal Aid Program Administration	54
Maintenance and Development	55
Personnel Report	56
Legislative Report	58
Financial Report	59



MassWildlife

Photography by Bill Byrne.



Printed on Recycled Paper

THE BOARD REPORTS

George Darey
Chairman

The Massachusetts Fisheries and Wildlife Board is a group of seven persons, each selected for a demonstrated interest in wildlife. By law, the persons appointed to the Board are volunteers, receiving no remuneration or expenses for their service to the Commonwealth. Five of the seven are selected on a regional basis, with one member, by statute, representing agricultural interests. The two remaining seats are held by a professional wildlife biologist or manager, and a representative with a specific interest in the management and restoration of those wildlife populations not classified as game species. Each member is appointed by the Governor to a five year term. The Board oversees operations of the Division of Fisheries and Wildlife, reviews the agency's programs, and sets policy and regulations pertinent to wildlife in the Commonwealth.

One member — Nancy Begin — resigned her seat this year. She has given many years of service to the Board and the sporting, agricultural and environmental communities of Massachusetts. We thank her and wish her well. While she cannot be replaced, the Board is pleased with the appointment of Fred Winthrop to fill her vacant seat.

During this fiscal year the Board continued to hold monthly meetings at locations around the state, hold public hearings on proposed regulatory changes, and address issues of specific concern. While many different matters and issues were brought before the Board this year, most of its time was spent in scrutiny and review of Division programs and proposals for regulatory changes. Among the items examined were:

Waterfowl Regulations

The Board heard its annual presentation from Waterfowl Project Leader H Heusmann on the waterfowl hunting framework and proposed season dates, bag and possession limits for the the 2000 waterfowl seasons. Following a public hearing on these proposals, the Board voted unanimously to accept them.

Lead Sinker Regulation

The Board reviewed the lead sinker regulation proposed by agency staff last year, and following much discussion and consideration of all the comments received at a public hearing and in written form thereafter, voted unanimously to accept the regulation to ban the use of lead sinkers in the Quabbin and Wachusett Reservoirs.

Striped Bass Regulation

The Board reviewed a proposed regulation to increase the size limit for striped bass caught from inland waters to 30 inches from the current limit of 28 inches, and to retain a limit of one-fish per day. This regulation would apply to all inland waters except the Connecticut River, which would have a 2 fish per day daily limit: one 26-30 inches, the other greater than 40 inches. A public hearing on the proposal, including the slot limit for the Connecticut River, was held in June, and the Board, after reviewing and considering all public comment, voted unanimously to adopt the new regulations.

Later, the Division of Marine Fisheries and the state of Connecticut having changed their regulations concerning striped bass again, the Board again considered increasing the slot limit on the Connecticut River to reflect the change. The Board voted unanimously to rescind its original vote and set the limit at one bass per day, 24-32 inches total length, and one bass per day greater than 41 inches on the Connecticut River (two bass per day total). All other inland waters will retain the one bass per day, 28 inch minimum requirement.

Broodstock Salmon Regulation

The Board heard a staff proposal to clarify broodstock salmon regulations, primarily the definition of what constitutes a broodstock salmon. Noting that the harvest of Atlantic salmon is lawful in all inland waters of the Commonwealth except in the Connecticut River and its tributaries and the Merrimack River downstream of the Essex Dam, there appears to be no conflict other than in nomenclature. A public hearing was conducted, and no comment being received other than a single one in favor of defining "broodstock," the Board voted unanimously to accept.

Hunter Education

The status and improvement of the Hunter Education Program has long been of great concern to the Board, and the members are very pleased that it is now moving forward on a solid footing. The Board welcomes the appointment of former Furbearer Project Leader Susan Langlois as the Program's new Coordinator, and thanks Marion Larson for keeping the Program running smoothly during the interim period.

Deer Management Regulations

At the last meeting of the previous year the Board heard a presentation and staff proposal to (1) move the boundary between Deer Management Zones 9 and 10



Executive Office of Environmental Affairs Secretary Bob Durahd and Governor Argeo Paul Cellucci present the first Francis W. Sargent Award to Paul Kress of Carlisle.

west to Route 495 to increase the size of DMZ 10 by 304 square miles and thus improve deer management in the Metrowest area. The Board also heard a staff proposal to remove the bag limit on antlerless deer in DMZs 10, 11, 12 and 13. This would allow hunters to purchase unlimited numbers of antlerless permits for use in these DMZs, as has been the case for some years in DMZ 14. This would allow hunters with access to private land the ability to take more antlerless deer and thus help alleviate local deer problems. The Board also heard a staff proposal for a regulatory change that would continue to allow hunters to have only one unsealed deer in possession in DMZs 1 - 8, but would allow two unsealed deer in DMZs 9 - 14.

These proposals are all part of a strategy designed to maintain deer population management as management, rather than reduce it to deer population control. Following consideration of all comments received during and after the public hearing, the Board voted unanimously to accept the proposed changes.

The Board heard another presentation in June to change the boundary of DMZ 12 to the Cape Cod Canal; to remove the pre -1865 design criteria under Primitive Firearms season regulations; and to require that an antlerless deer permit be required to take an antlerless deer in any deer season (i.e. archery and primitive firearms) statewide. These proposals will be presented at a public hearing early next year.

Trapping Regulations

The Board has watched with increasing concern the evolving situation in the Commonwealth relative to a rapidly increasing beaver (and muskrat) population caused by the severe restrictions placed on the use of the most effective traps by referendum in 1996. It heard a report on a bill to address trapping regulations relative to the use of these restricted traps, the breaching of beaver dams, installation of water flow devices, and the transportation of wildlife. The Board supports working cooperatively with all the government and private agencies involved in addressing the impact of the growing beaver population. The Board is pleased that a management plan for beaver problems is now being formulated by staff, and that \$185,000 has been appropriated by the legislature to address these issues, but we remain gravely concerned about the costs this agency could incur in the future, and note that it is very important to document how much staff time and effort is expended in addressing beaver/muskrat problems.

A public hearing was held concerning the formulation of new regulations to address the permitting process allowing the breaching of beaver dams, installation of flow devices, and the use of Conibear traps. The principal change is that the regulations place the focus of the permitting process on municipal Boards of Health and Conservation Commissions. The Board voted unanimously to accept the new regulations.

Endangered Species List Changes

As it does every two years, the Board reviewed changes to the Endangered Species List proposed by the Nongame Advisory Committee. After due consideration the Board concluded that the changes proposed this year were of a minor housekeeping nature, primarily involving new taxonomic designations for various species and subspecies. A public hearing was held in August, and upon hearing no comment, the Board voted unanimously to accept the recommendations, which involved two special concern species, four threatened species, and two endangered species. In addition, two species were delisted.

Miscellaneous

The Board voted unanimously to support the filing of legislation to change the name of the Nongame Advisory Committee to the Natural Heritage Advisory Committee. It also voted to reappoint Marilyn Flor and Pam Weatherbee to that committee.

It voted unanimously to send a letter to the military expressing its view that the buffer zone around the clean-up area at Otis Airforce Base should be opened to hunting during the shotgun season. The Board commends Commissioner David Peters and the Massachusetts Sportsmen's Council for their efforts to have this area opened.

The Board heard a presentation on the damage ATV use is causing on Wildlife Management Areas in the Southeast District, and especially at Hockomock Swamp WMA. This is a recurring problem of grave concern, and a

working group involving the Board, Law Enforcement, the Commissioner and Director will be set up to resolve this problem. On a related note, the Board voted to oppose a bill that would open all state land to off-road vehicles.

The Board also voted, as recommended by staff, to set terms of 1, 2 and 3 years for members of the Massachusetts Fish & Wildlife Conservation Endowment, Inc., a nonprofit foundation the Board has been working to create for several years. It also voted to go on public record in support of the Conservation and Reinvestment Act (CARA) and sent a letter to Congressman James Hansen to urge its enactment.

The Board would like to commend the staff and administration for making the difficult move of the Boston office from the Saltonstall Building to Causeway Street while still managing to maintain all programs and services. It also would like to express its thanks and well wishes to Dr. John McDonald, who resigned as Deer Project Leader to accept a position at Southern Illinois University. We have every confidence that his successor, Bill Woytek, will fill the vacancy with equal expertise.

The Board was particularly delighted to present the first Governor Francis W. Sargent Conservation Award to Paul Kress of Carlisle, and hopes to present the award annually.

The Board also heard presentations on the BioMap Project; the cooperative work of the agency's forester and the Ruffed Grouse Society; the Upland Habitat Management aspects of the Biodiversity Initiative; and the ongoing radio-telemetry deer study.

Massachusetts Fisheries and Wildlife Board

George L. Darey, Lenox, *Chairman*

John F. Creedon, Brockton, *Vice Chairman*

Michael P. Roche, Orange, *Secretary*

Russell A. Cookingham, Monument Beach

Ernest W. Foster, Jr., Worcester

Joseph S. Larson, Ph.D., Pelham

Frederic Winthrop, Ipswich

FISHERIES

Dr. Mark S. Tisa
Assistant Director

Fishing, hunting, and wildlife related recreation are important activities for residents and nonresidents of Massachusetts. According to the 1996 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, more than 310,000 Massachusetts residents age 16 and older went freshwater fishing during 1996. Additionally, more than 66,000 nonresidents fished the state's lakes, ponds, rivers and streams. An average of 14.4 days were spent fishing by each angler. Fishing pressure in Massachusetts was estimated at 40 trips/acre versus the national average of 27 trips/acre. The American Sportfishing Association estimated expenditures of \$274,273,777 for recreational freshwater fishing in Massachusetts and they estimate that fishing generated over \$26 million in sales tax revenue and created some 5,636 jobs.

The Commonwealth's aquatic resource inventory includes a variety of both lotic and lentic fisheries habitat ranging from coldwater, wild trout fisheries to warmwater panfish species. There are approximately 2,675 lakes and ponds, totaling about 142,681 surface acres. Pondered waters are mostly less than 500 acres in size. The two largest bodies of water, both man-made drinking water supplies, are the Quabbin (25,000 acres) and Wachusett (5,000 acres) Reservoirs. Angler access is partially restricted on both reservoirs. The largest river in Massachusetts is the Connecticut River with 72 miles (7,284 acres) transecting the Commonwealth. The 2,027 named streams flow about 10,704 miles and comprise approximately 14,900 acres. The protection, management and enhancement of these inland fisheries resources and their associated habitats involves several ongoing fisheries projects.

New for 2001 Target Fish Community Development

A project was begun to identify waters that MassWildlife considers to be Coldwater Fishery Resources (CFR's). A series of criteria were developed and the existing databases were queried to determine which of the waters that had been sampled in the Commonwealth met the criteria.

Rainbow trout were stocked at Quabbin Reservoir in May of 2001, after a 16-year absence due to low pH.

Over 400 sportfishing pins were awarded in 21 categories for calendar year 2001.

A gold pin was awarded for shad for the first time in over five years and a new state record tiger muskellunge was landed at Pontoosuc Lake, Pittsfield.

Anadromous Fish Investigations General

MassWildlife continued to work closely with the newly formed EOE Watershed Teams, particularly on the Westfield, Connecticut, Deerfield, Millers, and Chicopee Rivers. The project leader attended many Westfield Team meetings, participated in both the Westfield River's and Deerfield River's public forums, and worked successfully to involve the Watershed Teams in the salmon fry stocking program. The Connecticut River Team stocked over 200,000 fry. The Westfield Team and The Westfield Watershed Association (private group) each organized a stocking day (100,000 fry each day), and the Deerfield and Millers teams also helped to organize and stock 100,000 fry each. The Westfield Team volunteered to staff the DSI fishway during the fall fish passage season (September 15 - October 31).

The project leader also has worked closely with the Deerfield/Millers chapter of Trout Unlimited on fry stocking, hydropower relicensing, implementation of a trout study in the Deerfield #5 dam bypass reach, and on expanding the Atlantic salmon egg rearing program (ASERP) to 19 schools in the CT River watershed.

No major malfunctions were experienced at any of the fishways on either the Connecticut or Merrimack Rivers.

Connecticut River Holyoke

The Holyoke Dam fishlift operated for upriver fish passage from April 15 through July 7 and again from September 15 through November 15, 2000 except during periods of high water. Seven species of anadromous fish were identified and tallied during the spring/summer fish passage season. The number of Atlantic salmon trapped at the fishlift decreased from 91 in 1999 to 50 in 2000.

The number of American shad lifted at the site increased from 193,592 in 1999 to 225,042 in 2000, although this is still below the high numbers seen during the early 1980's and early 1990's. The Holyoke fishlift continues to be a major source of American shad for other shad restoration projects in the Northeast. A total of 3,580 shad were trapped by Division personnel in 2000 for restoration efforts in Massachusetts (152), New Hampshire (1,526), Connecticut (610), and Maine (1,292.)



Biologist Caleb Slater weighs salmon fry prior to release.

The number of blueback herring passing through the fishlift also increased to 10,587 which is still well below the runs of 500,000 seen in mid-1980's. The number of sea lamprey were passed in 2000 was 21,036, down from the record number of 97,277 recorded in 1998, but much closer to the long term average.

Turners Falls

The fish ladders at Turners Falls operated from May 10 through July 3, 2000, however, the total number of shad passing through the facility remains disappointingly low. Only 2,590 shad were counted passing through the facilities. This equals only 1% percent of the total number of shad passed through the Holyoke facility. The agencies involved with the restoration project have started a research project directed at increasing the passage through the Cabot ladder. This research project started in 1999 by monitoring PIT tagged shad in the Cabot ladder, and will continue in 2001 with the introduction of ladder modifications.

Westfield River

In 2000, a fish ladder was operated for the fifth year at the Decorative Specialties International Inc. (DSI) dam in West Springfield, MA. The fishway and associated downstream bypass facilities were constructed in the fall of 1995.

The DSI fishway was operated for upriver passage during spring/summer (April 15 through July 7,) and fall (September 15 through October 15). Five species of anadromous fish and six species of resident fish were identified and counted during the spring/summer fish

passage season. Passage included 2,040 sea lamprey and 3,558 American shad, a new DSI record. In addition, several species of resident fish were counted at the project in large numbers as well. The list includes white sucker, brook and brown trout and smallmouth bass.

The number of Atlantic salmon returning to the Westfield River decreased this year from 17 in 1999 to 11 in 2000. Per agreement with the U.S. Fish and Wildlife Service, 90% of the returning fish are taken to the Cronin National Salmon station in Sunderland. This left one additional salmon which was transported upriver to Huntington, and released into the East Branch of the Westfield.

Atlantic Salmon Fry Stocking, Survival and Habitat Assessment

During spring 2000 a total of 2,071,063 Atlantic salmon fry were released into tributaries of the Connecticut River in Massachusetts by volunteers and members of the Americorps Program. The majority of these fish (938,630) were stocked into the Westfield River system. The Deerfield River system received the second greatest number (806,512). Other smaller tributaries to the Connecticut were stocked as well. These include the Manhan, Fourmile Brook, Mill (Northampton, Hatfield, Northfield), Sawmill and Fall Rivers. A small segment of the Millers River was also stocked. Survival of the stocked fry was estimated by electrofishing techniques. Results of fall electrofishing operation show that salmon were found in all waters which had been stocked in the spring. Survival into the second year of life was also documented. The estimate of spring 2000 smolt production was 51,482 smolts to the Connecticut River coming out of Massachusetts tributaries.

A survey of the total amount of Atlantic salmon habitat in the tributary waters of the Connecticut in Massachusetts is now largely complete. An estimated 49,281 units (one unit equals 100 square meters of river area) of Atlantic salmon habitat have been assessed through this effort.

Merrimack River

The two mainstem dams on the Merrimack River in Massachusetts were operated and monitored for anadromous fish passage during the spring/summer of 2000.

Essex Dam

The Essex Fishlift was operated from May 1 through July 7, 2000. For the fall season the fishway operated from September 18 through October 7. During the spring of 2000 Atlantic salmon numbers (85) were down significantly from last year (192). The record number of American shad passing through the lift (72,571) was 20% greater than the previous record (56,673) set last year. River herring (23,587) increased substantially from the number passed in 1996-1999 (51, 362, 1,400, 7,898 respectively) but remain depressed when compared to the 380,000 counted in 1991. Striped bass (1,124) increased from 840 passed in 1999. Sea lamprey

passage (11,002) was up from the 1999 total (9,710) but still half that of the peak numbers recorded in the mid-1980s.

Pawtucket Dam

The Pawtucket Dam fish elevator was operated from May 10 through June 6. The Pawtucket Dam fish ladder operated from May 12 through June 1. Some 12,716 shad passed through the system. This is down slightly from the record passage of 16,348 in 1999 and represents 17.5% of the shad lifted in Lawrence. River herring (673, or 3% of Lawrence passage) decreased substantially from the number passed in 2000 (2,930) and remains depressed when compared to the 37,000 counted in 1989. 66 striped bass were lifted. Sea lamprey passage (2,259, or 20% of Lawrence passage) was less than the 2000 number (3,690) a facility record. No sea-run Atlantic salmon were seen at the facility but a large number (76) of surplus broodstock from the New Hampshire sport fishery were counted in the vicinity of the lift.

Technical Assistance

The majority of technical assistance time was spent addressing fish passage issues related to the FERC relicensing of the Holyoke project.

Downstream passage facilities were completed on the four lowest dams on the Deerfield system (#2, #3, #4, and Gardners Falls) in 1999. These facilities began operation during the smolt out-migration last spring (1999) and were evaluated at that time. Deficiencies were found, corrections/modifications were made and evaluations continue in spring 2000.

The FERC re-licensing process continues at the Woronoco project on the Westfield River. Technical assistance time was spent addressing fish passage and minimum flow issues at this project. The final draft of the license application was filed this year.

Four FERC licensed projects (Red Bridge, Putts Bridge, Dwight, and Indian Orchard) on the Chicopee R. were transferred to Con. Edison last year. Technical assistance time was spent addressing fish passage and minimum flow issues at these projects again this year.

The project leader continued to attend the Connecticut River Atlantic Salmon Compact (CRASC) Technical Committee Meetings and Merrimack Technical Committee meetings.

CRASC continued work on the Connecticut River Atlantic Salmon Restoration Action Plan, based on the Strategic Plan that was completed last year. The project leader took over as the chairman of the CRASC Shad Studies Group in 2000.

The project leader was actively involved with the River Restore Program, acting as MassWildlife's representative on the Dam Removal Triage Team. This involved traveling around the state evaluating dams that may be removed.

Warmwater Fisheries Investigations

Fiscal year 2001 saw the continuation of survey work and stocking esocids (northern pike and tiger muskellunge). Fieldwork for these studies was carried out by the Division's Warmwater Project Leader with assistance from the state's five Wildlife Management Districts.

Survey work focused on ponds sampled in conjunction with the Massachusetts Department of Environmental Protection's (DEP) Total Maximum Daily Load (TMDL) project. The project (Lake Surveys for TMDL Development) is designed to determine how much of a given pollutant can enter a waterbody while still meeting the Commonwealth's Surface Water Quality Standards. The Fisheries Section's role in the TMDL project is to conduct fisheries and macrophyte surveys, to establish a relationship, if possible, between fish and plant populations and to assist DEP in collecting water quality samples. The waters chosen for monitoring are based on DEP's five-year rotating cycle among groups of watershed basins. For FY 2001, The basins were the Farmington, Westfield, Concord, Taunton and South Coastal. From these basins biologists selected Farm Pond, Framingham; Heard Pond, Wayland; Willis Lake, Sudbury; Jacobs Pond, Norwell; Ames Long Pond, Stoughton; and West Meadow Pond, West Bridgewater for sampling. All of these waters are on DEP's 303(d) list (waters which are not meeting water quality standards) for abundant aquatic vegetation. Sampling at each pond consisted of water quality, fisheries, and vegetation and bathymetric mapping. Water quality sampling was conducted once a month during July, August and September for dissolved oxygen, temperature, conductivity, pH, total phosphorus, nitrate, nitrite and nitrogen, total alkalinity, total phosphorus sediments, total iron sediments and chlorophyll a. Fisheries sampling consisted of spring and fall night electrofishing, late summer shoreline seining, and fall overnight gillnet sets. In addition to assisting DEP in their ongoing effort to monitor water quality, the TMDL project, which is scheduled for at least two years, will provide valuable data on waters that have not been surveyed in recent years. The 2001 sampling season concluded the initial two-year portion of this project. Data analysis and final report generation are progressing, and it is hoped that this will become a long-term project in order to create the database needed to determine the relationships between abundant aquatic vegetation and fisheries populations.

The stocked esocid program continues to be fine-tuned as we monitor catches of northern pike and tiger muskellunge. Currently, each Wildlife Management District has one to three bodies of water stocked with tiger muskellunge depending on total numbers available. For the Northeast District the primary water is Lake Mascupic, Tyngsborough which has been stocked for the last seven years and is beginning to produce legal fish. When additional fish are available, Spy Pond, Arlington and Lake Quanaowitt, Wakefield are also stocked. In the

Southeast District, South Watuppa Pond, Fall River has been stocked for the past two years and will be monitored for up to five years to determine if a fishery has been established. In the Central District, the A-1 Site and Lake Chauncey, Westborough that were historically stocked, will again be actively managed. In the Connecticut Valley District, Hampton Ponds, Westfield, has been stocked for the past seven years and is beginning to produce legal fish. Pontoosuc Lake, Pittsfield in our Western District, which has the most consistent stocking history in the state, continues to be one of the best producers. In fact, Pontoosuc Lake produced a new state record tiger muskellunge on New Year's Eve 2001, a massive 27 pounder. This is a world record for a tip-up through the ice.

Spring and summer surpluses of northern pike and tiger muskellunge from New Jersey, Pennsylvania and New York were available once again for stocking waters

Freshwater Sportfishing Awards Program

For over 30 years, the Freshwater Sportfishing Awards program has been awarding pins to anglers who catch trophy size fish from the waters of the Commonwealth. Minimum qualifying weights are currently in place for 22 different species of fish. Upon submitting an eligible fish to an authorized weigh station (nearly 100 across the state), the angler receives a bronze pin depicting the species of fish with the weight and year of catch stamped on the back. In addition to the bronze pin, the angler who weighs in the largest fish of the year for each of the categories is awarded a plaque and gold pin at the annual sportsmen's show held in February at the Worcester Centrum. Over 400 pins were awarded in 21 categories for calendar year 2001. In addition, a gold pin was awarded for shad for the first time in over five years and a new state record tiger muskellunge was landed at Pontoosuc Lake, Pittsfield.

<i>Species</i>	<i>Total Pins</i>	<i>Gold Pin</i>
Black crappie	8	2 lbs. 11 ozs.
Broodstock salmon	41	20 lbs. 6 ozs.
Brook trout	52	5 lbs. 13 ozs.
Brown trout	3	7 lbs. 9 ozs.
Bullhead	21	2 lbs. 8 ozs.
Carp	10	36 lbs. 13 ozs.
Chain pickerel	37	6 lbs. 15 ozs.
Channel catfish	15	19 lbs. 4 ozs.
Lake trout	14	14 lbs. 8 ozs.
Landlocked salmon	0	NA
Largemouth bass	14	8 lbs. 7 ozs.
Northern pike	21	26 lbs. 9 ozs.
Rainbow trout	14	6 lbs. 0 ozs.
Shad	1	5 lbs. 2 ozs.
Smallmouth bass	27	6 lbs. 7 ozs.
Sunfish	9	1 lb. 8 ozs.
Tiger muskellunge	5	27 lbs. 0 ozs.
Tiger trout	4	3 lbs. 12 oz.
Walleye	1	5 lbs. 11ozs.
White catfish	15	7 lbs. 3 ozs.
White perch	40	2 lbs. 4 ozs.
Yellow perch	36	2 lbs. 2 ozs.

of the Commonwealth. As in recent years, the lion's share of these were tiger muskellunge. In addition to providing these surpluses, the Pennsylvania Fish Commission held an allotment of tiger muskellunge until early fall, allowing for the stocking of much larger fish. This increases chances for survival, which will ultimately lead to more legal fish entering the fishery. As a result of the generosity of these states, 18,999 tiger muskellunge were stocked into seven waters. As in past years, northern pike surpluses have become harder to obtain as neighboring states discontinue or scale back their hatchery programs.

Quabbin and Wachusett Reservoir Fisheries Project

Quabbin Reservoir

The Metropolitan District Commission indicates that 33,933 people came to the reservoir through the main fishing areas during calendar 2000. This is a slight increase over 1999.

Much of this increase may be ascribed to the 1,668 special one-day fishing licenses sold

during the season. Overall usage should increase in future years because MassWildlife stocked the reservoir with 5,000 rainbow trout in May, after a 16-year absence due to low pH.

Landlocked Salmon

MassWildlife released 3,400 landlocked salmon on May 30 at an average weight of 3.0 ounces and held the remaining 10,200 salmon until June 20 at which time the fish averaged 4.3 ounces.

The August sample produced 12 fish from the 2000 stocking, slightly above average.

A creel survey conducted from opening day through July 6 indicates anglers are directing effort toward landlocked salmon. With 14 fewer days available this year, the catch still surpassed the 1999 catch of 444 by 40 fish. Most of this increase came from fish that had been in the reservoir under a year.

Lake Trout

The annual gillnet sampling conducted in mid September produced an average catch of 7.169 lake trout per net night. This compares to the previous three-year average of 6.507. Intense gillnetting efforts on Winsor dam in October and November by staff and volunteers produced a catch of 458 mature fish. The number above 23 inches long increased from 27 last year to 46. This increase indicates that the slot limit is effectively protecting the larger, older fish.

Sampling lake trout through the ice via rod and reel is providing invaluable information. Staff and MDC volunteers captured a total of 238 individuals ranging from 13.4 to 26.8 inches from nine sites covering the middle section of the reservoir's east side. Only the section from Den Hill to the east branch of the Swift River produced

a low catch. Stomach samples were taken only from individuals less than 22 inches long. This showed lake trout consuming Isopod invertebrates all winter, even when other desirable forage such as rainbow smelt are readily available. While biologists found 14 different types of organisms consumed, rainbow smelt and Isopods dominated the stomach contents throughout the area sampled.

A cursory analysis indicates that the lake trout catch is 337 fish lower than the 1999 total of 1525. The late opening, which precluded any catch for the first 14 days in April, may account for the reduction.

Wachusett Reservoir

Time and manpower constraints forced us to limit field activities to monitoring landlocked salmon production. We estimate total fry and parr production for the Stillwater River at 673 and 213; the respective figures for Gates Brook are 13 and 70. The impact of beaver dams on the Stillwater River is dramatic in light of the historic high fry and parr figures of 17,500 and 5,600, respectively in 1997.

As the figures for Gates Brook production show, habitat issues are increasing. To insure some production from this brook in the future, the Division suggested the town and MDC authorize digging an instream sediment detention basin about 100 yd. West of Rt. 140. This basin worked perfectly, filling in less than three months. It is emptied periodically. I began negotiations with the town of West Boylston to reduce sediment from road runoff. Funds for significant immediate improvement appear unavailable, but the town recognizes the issue and wishes to work toward a zero sediment goal.

Fish Kill Investigations

This was the second year of fish kill investigations under an MOU between DEP, MDFW, DELE and DFA which redefines responsibilities and appoints fish kill coordinators in all agencies. There were 37 fish kill complaints (32 ponds, 5 streams); six pollution related. This compares to 44 fish kill complaints in FY2000. Of the 37 complaints, 13 required field investigations. In all a minimum of 8484 fish were record as killed, of which 1,852 were pollution related. There were five suspect, pesticide related kills in the southeast associated with cranberry bog operations of which only one was confirmed. A sixth kill on the Blackstone River was the result of a fuel spill from a rollover of an oil truck. The severe winter and heavy snows of the winter of 1999 resulted in winter kills of many small, shallow ponds of which eleven were reported to MassWildlife the following spring. Some 15 disease-related kills followed ice out as winter stressed populations began to spawn as waters warmed into June.

Environmental Review

There were 80 requests to review project proposals involving fisheries habitat on 239 water bodies (217 rivers and 12 lakes). Requests fell out as follows: federal government 3.0%, state agencies 40%, local govern-

ment 3% and private agencies 54%. Affected resources were partitioned as follows: coldwater (40%), warmwater (27%) endangered fisheries habitat (19%) and anadromous resources (14%). The majority of the projects were bridge replacements over streams (36%), road reconstruction (20%) and discharges (12%); the remainder was divided between gas pipe lines, drawdowns, installation of microwave towers, construction of new golf courses and water withdrawals. MassWildlife provided review and technical input on numerous 401 permits, water withdrawal applications, interbasin transfers and NPDES permits. MassWildlife provided technical assistance to DEP and DPH on toxics-in-fish issues.

MassWildlife reviewed numerous Water Management Act permits. The proposed Poorfarm Brook well field in Holden continued as a major issue. Other issues included dam decommissioning and removal, CSO abatement on mainstem anadromous rivers, expansion of the Westfield WWTP and fish passage issues, Mirant/Kendall power plant expansion on the lower Charles River, and remediation of a trout stream at the Wachusett Mountain Ski area. MDFW served on the state's Toxics-in-Fish Committee, the Mercury Task Force, Dam Decommissioning Task Force and State Pesticide Board.

Stream Survey and Inventory Project

Fiscal Year 2001 Stream Survey project involved participation in the following projects:

- Ipswich River Assessment
- Target Fish Community Development
- Stressed Basins Project
- Watershed Initiative Sampling
- Coldwater Fishery Resource Designation

Ipswich River Assessment

Data gathered during the 1998 and 1999 field seasons were entered into a database developed for this project, proofed and summarized. A draft report entitled "Assessment of Habitat, Fish Communities, and Streamflow Requirements for Habitat Protection, Ipswich River, Massachusetts, 1998-99" was submitted for publication through the Marlboro USGS office. Presentations were given based on this subject matter to the public, at professional conferences, and for interested Watershed Coordinators and groups.

Watershed Initiative Sampling

Watersheds were sampled as part of the 5-year basin cycle using a standard sampling protocol. Of 166 sites sampled in FY 2001, the majority of the samples were in the Blackstone, Concord, Deerfield, and Millers watersheds. Samples were also taken in the Boston Harbor, Buzzards Bay, Ipswich, Merrimack, Nashua, Quinebaug, Westfield, Shawsheen, and South Coastal watersheds (Table 1, pages 14-16). Requests for potential stream survey and inventory sampling locations in the above watersheds were solicited from agencies and stakeholders and were used to prioritize sampling locations.



A fisheries crew samples fish populations at Lake Ripple, Grafton.

Target Fish Community Development

Efforts continued on the development of the Ipswich Target Fish Community and were based on the Quinebaug River Target Fish Community. The Ipswich River Task Force was formed to develop these criteria. Several drafts of the Ipswich Target Fish Community Report were reviewed by the Ipswich River Task Force. The latest draft from this fiscal year is entitled "Ipswich River Fisheries, Current Status and Restoration Approach Draft: November 26, 2001" The final draft of this document will be completed in FY 2002.

Massachusetts Watershed Initiative (MWI) Funding

MassWildlife received funding through MWI again this fiscal year. The total for FY01 was \$45,000. This funding was crucial in maintaining and upgrading the sampling resources and retaining the agency's capability to be proactive in our approach to monitoring fisheries resources statewide. The funding was used to continue equipping regional districts so they can monitor and assess fisheries resources across the state.

Coldwater Fisheries Resource Designation

A project was begun to identify waters that MassWildlife considers to be Coldwater Fishery Resources (CFR's). A series of criteria were developed and the existing databases were queried to determine which of the waters that had been sampled in the Commonwealth met the criteria.

Three separate lists were used to compile the list of CFR's. The first database was one developed by David Halliwell (1974). This database includes 1014 samples on streams and rivers from 1969 to 1998, with most of the samples occurring between 1977 and 1990. This list was reviewed and screened for waters that met the criteria stated above with regard to coldwater fish presence/absence. Those waters that had an average of only one or fewer coldwater fish per sample were further scrutinized to determine if the fish sampled were aber-

rations or could truly be expected to be a component of the fish fauna in that waterbody. This was accomplished by reviewing the actual data sheets that were archived in the paper files and further, by providing the list of waters to District biologists for their review.

The second database was one developed in 1998 using Microsoft Access. This database included 343 samples by the end of FY01. The current database was also screened based on the criteria stipulated above and designated as a CFR if the criteria were met. Again, in instances where only one coldwater fish was captured, the records were further scrutinized to determine CFR status.

Waters currently managed as salmon-stocked waters were also included as CFR's. All waters stocked with Atlantic salmon fry have been sampled and salmon survival and growth to age 2+ (smolt) have been demonstrated.

The Division should be contacted in the event that a waterbody does not appear on this list. This list of CFR's is useful as a screening tool to highlight sensitive environmental areas, not as a definitive list of all waters that are CFR's. Each year, as subsequent sampling results are recorded, the list of CFR's will be updated to reflect the most current information.

A Coldwater Fishery Resource (CFR) is determined by:

1. The presence of a reproducing salmonid population; or
2. The presence of one of the following non-salmonid coldwater fish species: slimy sculpin (*Cottus cognatus*); longnose sucker (*Catostomus catostomus*);
3. The presence of Atlantic salmon (with the exception of the Connecticut and Merrimac River mainstems and waters stocked by MassWildlife with broodstock Atlantic salmon); or
4. Listing as a water stocked with Atlantic salmon as coordinated by the Atlantic Salmon Restoration Effort; or

Continues, page 16

Table 1. Stream Survey and Inventory Sites Sampled in FY 01

Saris/Palis	Waterbody Name	Town	Watershed
5132000	Warren Brook	Upton	Blackstone
5131000	Blackstone River	Blackstone	Blackstone
5132575	Poor Farm Brook	Worcester	Blackstone
5132126	Unnamed Tributary to Carpenter Reservoir	Northbridge	Blackstone
5132425	Quinsigamond River	Grafton	Blackstone
5131975	Center Brook	Upton	Blackstone
5131975	Center Brook	Upton	Blackstone
5131800	West River	Uxbridge	Blackstone
5131800	West River	Northbridge	Blackstone
5131400	Fox Brook	Blackstone	Blackstone
5131125	Peters River	Bellingham	Blackstone
5133015	Ararat Brook	Worcester	Blackstone
5132650	Cold Spring Brook	Sutton	Blackstone
5132575	Poor Farm Brook	Worcester	Blackstone
5131125	Peters River	Bellingham	Blackstone
5132600	Sewell Brook	Boylston	Blackstone
5131075	Burnt Swamp Brook	Wrentham	Blackstone
5131125	Peters River	Bellingham	Blackstone
7341525	Traphole Brook	Norwood	Boston Harbor
7341550	Hawes Brook	Norwood	Boston Harbor
9559425	Mattapoissett River	Mattapoissett	Buzzards Bay
9559625	Acushnet River	Acushnet	Buzzards Bay
9559625	Acushnet River	Acushnet	Buzzards Bay
8248475	Jackstraw Brook	Westboro	Concord
8248425	Whitehall Brook	Hopkinton	Concord
8246500	Concord River	Carlisle/Bedford	Concord
8247375	North Brook	Berlin	Concord
8247550	Cold Harbor Brook	Northboro	Concord
8248425	Whitehall Brook	Hopkinton	Concord
8247325	Hog Brook	Hudson	Concord
8247175	Great Brook	Bolton	Concord
8246900	Nagog Brook	Acton	Concord
8247675	Dugan Brook	Concord	Concord
8247025	Guggins Brook	Acton	Concord
8247200	Fort Meadow Brook	Hudson	Concord
8247627	UNT To A-1 Site	Westboro	Concord
8247628	UNT To A-1 Site	Westboro	Concord
8246825	Spencer Brook	Carlisle	Concord
8247025	Guggins Brook	Boxboro	Concord
8246775	Assabet River	Hudson	Concord
8246775	Assabet River	Maynard	Concord
8246775	Assabet River	Hudson	Concord
8246775	Assabet River	Maynard	Concord
8246775	Assabet River	Maynard	Concord
8246775	Assabet River	Maynard	Concord
8246775	Assabet River	Hudson	Concord
8246500	Concord River	Billerica	Concord
8246775	Assabet River	Northborough	Concord
8247950	Pine Brook	Wayland	Concord
8246775	Assabet River	Northboro/Marlboro	Concord
3421725	Kidder Brook	Warwick	Connecticut
3315325	Bozrah Brook	Charlemont	Deerfield
3314375	West Branch North River	Heath	Deerfield
3315300	Rice Brook	Charlemont	Deerfield
3316200	Shipee Brook	Rowe	Deerfield
3316275	Reed Brook	Florida	Deerfield
3316300	Whitcomb Brook	Florida	Deerfield
3316325	Cascade Brook	Florida	Deerfield
3316325	Cascade Brook	Florida	Deerfield
3315675	Cold River	Charlemont	Deerfield
3315450	Mill Brook (3)	Hawley	Deerfield
3314850	Sheperd Brook	Buckland	Deerfield
3315375	Legate Hill Brook	Charlemont	Deerfield
3314875	Ruddock Brook	Buckland	Deerfield
3315450	Mill Brook (3)	Heath	Deerfield
3315200	Maxwell Brook	Charlemont	Deerfield
3313825	Creamery Brook	Ashfield	Deerfield
3316075	Pelham Brook	Rowe	Deerfield
3314375	West Branch North River	Colrain	Deerfield

Table 1. Stream Survey and Inventory Sites — Continued

Saris/Palis	Waterbody Name	Town	Watershed
8144450	Walker Brook	Townsend	Nashua
8144125	Mason Brook	Townsend	Nashua
8144175	Willard Brook	Townsend	Nashua
8144200	Pearl Hill Brook	Townsend	Nashua
8144225	Locke Brook	Ashby	Nashua
8144250	Trapfall Brook	Ashby	Nashua
8145700	Stillwater River	Sterling	Nashua
4129350	East Brook	Brimfield	Quinebaug
4128875	Quinebaug River	Sturbridge	Quinebaug
4129325	Wales Brook	Wales	Quinebaug
4129325	Wales Brook	Brimfield	Quinebaug
4128875	Quinebaug River	Sturbridge	Quinebaug
4128875	Quinebaug River	Holland	Quinebaug
8349200	Webb Brook	Billerica	Shawsheen
8349350	Spring Brook	Bedford	Shawsheen
8349400	Kiln Brook	Bedford	Shawsheen
8349000	Shawsheen River	Tewksbury	Shawsheen
8349000	Shawsheen River	Bedford	Shawsheen
8349075	Strong Water Brook	Tewksbury	Shawsheen
8349075	Strong Water Brook	Tewksbury	Shawsheen
8349150	Content Brook	Billerica/Tewksbury	Shawsheen
8349150	Content Brook	Tewksbury	Shawsheen
9456575	Wildcat Brook	Norwell	South Coastal
9458025	Beaver Dam Brook	Plymouth	South Coastal
3209950	Gibbs Brook	Blandford	Westfield
3211050	Pond Brook	Blandford	Westfield
9458025	Beaver Dam Brook	Plymouth	South Coastal
3209550	Tiffany Brook	Blandford	Westfield

Coldwater Fisheries Resource Designation — Continued from pg. 13

5. Regional biologist's input;
- 6 Temperatures that do not generally exceed 68 degrees Farenheit throughout the year as defined in DEP water quality standards; or
7. Any water tributary to a CFR as determined by the above criteria is also considered a CFR.

Hatchery Program

FY2001 (fall 2000 and spring 2001) was a very successful year for MassWildlife's trout program. The trout produced in MassWildlife's hatcheries were stocked in nearly 500 different water bodies across the Commonwealth during the fall and spring stocking seasons. A total of 480,380 pounds of trout, numbering 690,370 brook, brown, rainbow and tiger trout were produced at MassWildlife's trout hatcheries in FY2001 (Tables 1 and 2). Fall stocking included a total of 55,250 rainbow trout (12 -14 inches long), 5,000 surplus rainbow trout (6 inches long), 7,000 brown trout (12+ inches long) and 9,000 surplus six-inch brown trout. Fall stocking was done beginning the last week of September through the second week of October. During the spring stocking season, which ran from late February until the end of May, a total of 628,229 brook, brown, rainbow and tiger trout were stocked.

The Division continues to meet the goal set in 1994 to grow and stock larger trout. The trout produced in FY2001 weighed an average of 0.70 pounds apiece. Since the program of producing larger trout began, the average weight of trout produced has been about 0.71

pounds apiece compared to 1983 when the trout weighed an average of 0.35 pounds apiece. MassWildlife's goal is to have at least 50% of the stocked trout be 12 inches or better. This goal was met in FY2001 with 71% of the trout being more than 12 inches long. A total of 488,700 brook, brown, rainbow and tiger trout that averaged more than 12 inches or longer were stocked by the Division in FY2001.

Each of the agency's four trout hatcheries produced great fish in FY2001. McLaughlin Hatchery produced more than 171,000 rainbow trout that averaged more than 14 inches long despite having to grow the fish under sub-optimal conditions while the hatchery was being renovated! Sandwich Hatchery produced more than 3,500 tiger trout that averaged more than 14 inches long. Tiger trout are a cross between a brook trout male and brown trout female. They get their name from the tiger-like stripes on their backs. Tiger trout have become a popular fish among Baystate anglers because of their beauty and strong fight. Sunderland and Montague hatchery combined produced more than 55,000 12+ brown trout, making this one of the Division's most productive years ever for this difficult-to-grow fish.

The Roger Reed Hatchery in Palmer continued its key role in the Atlantic salmon restoration program and the landlocked salmon program for Quabbin Reservoir in FY2001. A total of 13,600 landlocked salmon smolts were released into Quabbin Reservoir. In addition, a total of 2000 landlocked salmon parr were released into the Quinapoxet River, a tributary to Wachusett, Reservoir. A total of 1.75 million Atlantic salmon eggs were collected from broodstock held at the station and

distributed among cooperating hatcheries in New England. A total of 1.1 million Atlantic salmon fry were also produced and stocked into rivers and streams in the Connecticut River drainage basin within Massachusetts. In addition, 502 adult broodstock salmon were stocked in selected waters across the Commonwealth. A summary of the numbers of each of the fish species produced by the Roger Reed Hatchery is in Table 3.

Significant capital improvement efforts continued in FY2001 at MassWildlife's hatcheries as a result of funding provided by the Executive Office of Environmental Affairs through Secretary Bob Durand. In 2001, particular effort was directed towards McLaughlin Hatchery where more than 1 million dollars was spent on the first major renovations to the hatchery since it opened in 1969. The major job accomplished in 2001 at McLaughlin Hatchery was rebuilding and resurfacing of the 200

concrete rearing pools used for all fish production at the hatchery. In addition, the driveways and roadways in the fish rearing area of the hatchery were completely resurfaced. Also, the 30 year old outdoor lights for the raceways were replaced with new energy efficient lights and the pumps and motors in each of the three water supply wells were replaced with energy efficient models as well. The electrical service entrance to the hatchery was also replaced and updated and a modern, state-of-the-art lightening protection system was also installed to protect the sensitive electrical alarm systems and sensors that operate the new hatchery water supply pumping system that was installed in FY2000. In addition to the infrastructure improvements, a design study was completed for an environmental education and visitor center at McLaughlin Hatchery.

2001 FISH PRODUCTION

Table 1. Summary of the number of trout produced and stocked from each of the Division's four trout hatcheries in FY2001.

Species	Size Cat. (inches)	Number of fish				Total No. of Fish
		Bitzer	McLaughlin	Sunderland	Sandwich	
Rainbow Trout	6 - 9	0	0	0	0	0
	09+	0	0	0	0	0
	12+	28000	80900	47524	50908	207332
	14+	23000	171243	13550	0	207793
	18+	135	0	0	1430	1565
	Sub-total	51135	252143	61074	52338	416690
Brook Trout	6 - 9	15100	0	0	700	15800
	09+	0	0	40376	0	40376
	12+	1525	0	0	1250	2775
	14+	2860	3750	6610		
	18+	0	0	0	190	190
	Sub-total	16625	0	43236	5890	65751
Brown Trout	6 - 9	0	0	0	0	0
	09+	31900	43600	69994	0	145494
	12+	22550	0	33210	2000	57760
	14+	0	0	0	1100	1100
	18+	0	0	0	0	0
	Sub-total	54450	43600	103204	3100	204354
Tiger Trout	6 - 9	0	0	0	0	0
	12+	0	0	0	300	300
	14+	0	0	0	2960	2960
	18+	0	0	0	315	315
	Sub-total	0	0	0	3575	3575
TOTAL		122210	295743	207514	64903	690370

Table 2. Summary of the weight of trout produced and stocked from each of the Division's four trout hatcheries in FY2001.

Size Cat. Species	(inches)	Weight of fish (lbs)				Total No. of Fish
		Bitzer	McLaughlin	Sunderland	Sandwich	
Rainbow Trout	6 - 9	0	0	0	0	0
	9+	0	0	0	0	0
	12+	17640	46106	35404	36927	136077
	14+	31936	163243	16939	0	212118
	18+	547	0	0	3680	4227
	Sub-total	50123	209349	52343	40607	352422
Brook Trout	6 - 9	2885	0	0	74	2959
	9+	0	0	12127	0	12127
	12+	1663	0	0	884	2547
	14+	0	0	5097	2758	7855
	18+	0	0	0	538	538
	Sub-total	4548	0	17224	4254	26026
Brown Trout	6 - 9	0	0	0	0	0
	9+	7923	13903	23139	0	44965
	12+	18479	0	30191	1043	49713
	14+	0	0	0	1113	1113
	18+	0	0	0	1299	1299
	Sub-total	26402	13903	53330	3455	97090
Tiger Trout	6 - 9	0	0	0	0	0
	12+	0	0	0	215	215
	14+	0	0	0	3641	3641
	18+	0	0	0	986	986
	Sub-total	0	0	0	4842	4842
TOTAL		81073	223252	122897	53158	480380

Table 3. Summary of landlocked salmon and Atlantic salmon produced at the Roger Reed Hatchery in FY2001.

Species	Size Category (inches)	Number	Weight (lbs)
Landlocked salmon	Parr (3+)	2000	100
	smolts (8+)	13600	3375
	Total	15600	3475
Atlantic salmon	green eggs	1758235	
	unfed fry (1+)	1100000	350
	adults (15+)	502	4205
	Total	2858737	4555

Fisheries Staff

Mark S. Tisa, Ph.D.
Assistant Director of Fisheries

Joseph Bergin, *Quabbin/Wachusett Fisheries Project Leader*

William Easte, *Anadromous Fish Assistant Project Leader*

Richard Hartley, *Warmwater Fisheries Project Leader*

Colleen Hubbard, *Secretary*

Richard Keller, *Fisheries Environmental Review Coordinator*

Todd Richards, *Stream Project Leader*

Ken Simmons, Ph.D., *Chief Fish Culturist*

Caleb Slater, Ph.D., *Anadromous Fish Project Leader*

WILDLIFE

Dr. Robert D. Deblinger
Assistant Director

The Wildlife Section oversees research and management of all avian and mammalian species which are utilized in any way for meat, fur or sporting purposes. The Wildlife Section has a staff of eight wildlife biologists who conduct research and management projects throughout the state with assistance by District personnel and in cooperation with the U.S. Fish & Wildlife Service and the Massachusetts Cooperative Wildlife Research Unit.

New for 2001

Massachusetts entered its fourth year of the federal Migratory Bird Hunter Harvest Information Program (HIP). HIP is designed to replace the present survey based on collecting names of duck stamp buyers at post offices, and will allow for more specialized surveys of various migratory bird species.

Construction was completed on the Lackey Pond dam, allowing the area to be re-inundated for the first time in more than a decade. This was a cooperative project involving several groups and was funded for the Division through Ducks Unlimited, Inc.'s M.A.R.S.H. program.

In July, 2000 the Massachusetts Legislature passed and the Governor signed a new law that modified the restrictions on beaver and muskrat traps to provide relief for people suffering from flooding impacts caused by beaver or muskrat. An emergency permitting system was created at the town level with certain non-emergency permits for specific traps available from the Division of Fisheries and Wildlife.

Bag limits for antlerless deer in the eastern Massachusetts were increased.

Migratory Bird Census

Mourning Dove Census: The number of calling doves on three long-term survey routes decreased 44% from 2000 to 2001. Counts on 8 comparable routes decreased 35% over the same period.

Woodcock Census: Seven randomized spring woodcock singing ground surveys were conducted in 2001. The total number of singing woodcock decreased 38% from 2000.

Waterfowl Research and Surveys: Preseason banding efforts began in August. Good water conditions prevailed during the summer of 2000 but airboat success was limited by low numbers of ducks and by mechanical problems. The steering mechanism broke on the second night of banding and engine problems plagued airboat

operations throughout September. Because of the increased potential for becoming stuck, several sites were not boated and others were boated more cautiously than in past years. The spring of 2000 was unusually cool and wet and duck production was low. Jack Renfrew, a sportsman on Cape Cod, operated a bait trap in Sandwich and banded 17 ducks. In total, only 590 birds were banded. This included 250 wood ducks, 152 mallards, 13 black ducks, 5 hybrids, and 147 greenwinged teal. Miscellaneous species comprised the remainder of the catch.

From September 5-25, Massachusetts conducted a resident Canada goose season. The state permit requirement was dropped, replaced by the newly implemented Migratory Bird Hunter Harvest Information Program (H.I.P.). The U.S. Fish and Wildlife Service estimated a September season harvest of 4,100 geese. This compares to a harvest estimate of 6,200 last year.

Duck hunting seasons in the Atlantic Flyway continued with the liberal option of 60-day seasons and a six bird bag limit. There also was a 40-day/2-bird bag Canada goose season in the Central and Coastal waterfowl hunting zones. In addition, a 15day/1 bird bag during November was allowed in the Berkshire zone. This was the second regular season goose hunting allowed in that region since 1995. It was made possible by increasing numbers of Canada geese in northern Quebec.

The annual midwinter coastal waterfowl inventory was flown on January 11,12, and 13, 2001. This year the procedure changed with MassWildlife contracting the survey out to the U.S. Fish and Wildlife Service and an independent observer. Observers counted 100,061 waterfowl. Black duck numbers were down 30% from 2000 and 32% below the 10-year average. Counts for most other species were below the 10-year average except for mallards (+5%) and brant (+53%). Part of the decline may have been associated with the new crew being less familiar with the area than previous crews, and their flight coverage being less extensive.

From January 15 to February 10, 2001, Massachusetts held a late, resident Canada goose season in the Central waterfowl zone and that portion of the Coastal zone north of Marshfield. No permits were required this year for the same reasons they were dropped for the September season. The USFWS estimated a harvest of 4,600 birds compared to 2,000 last year.

During April and May, MassWildlife participated in the northeastern states waterfowl breeding survey which is based on sampling randomly selected 1 kilometer square

plots. Massachusetts checked 93 of the 1,490 plots used in the survey. Eleven states participated in the 2001 breeding pairs survey for waterfowl. The population estimate for mallards was 384,875 pairs $\pm$ 45,662. The estimate for black ducks was 31,842 pairs $\pm$ 8,880; wood ducks, 186,142 pairs $\pm$ 35,384, and Canada geese, 390,306 pairs $\pm$ 53,963. Data from this survey is used to set hunting season regulations tailored to the Atlantic Flyway.

Division personnel continued to conduct nest box checks on 52 sites used by MassWildlife to monitor wood duck populations statewide. Summer checks revealed 367 wood duck nest starts in 628 available boxes, with 281 successful hatches (77%). In addition, there were 51 hooded merganser hatches from 83 starts.

Massachusetts resumed banding resident Canada geese by round ups during the summer molt. A total of 1,225 Canada geese were banded at 67 sites in 59 towns in Massachusetts. The total included 487 goslings and 738 adults. An additional 203 previously banded geese were recaptured.

Massachusetts entered its fourth year of the federal Migratory Bird Hunter Harvest Information Program (HIP). HIP is designed to replace the present survey based on collecting names of duck stamp buyers at post offices, and will allow for more specialized surveys of various migratory bird species.

Construction was completed on the Lackey Pond dam, allowing the area to be re-inundated for the first time in more than a decade. This was a cooperative project involving several groups and was funded for the Division through Ducks Unlimited, Inc.'s M.A.R.S.H. program.

Pheasant Program

A total of 40,000 pheasants were stocked by DFW personnel during fall 2000. All pheasants were purchased from private game farms in New York and Massachusetts. In addition, 7,000 six-eight week old birds were purchased and distributed to sporting clubs to be raised and liberated into public covers during the 2000 hunting season. The Southeast District personnel stocked 3,500 adult bobwhite quail purchased from a game farm in Connecticut.

Pheasants released for hunting were distributed (approximately) as follows:

Southeast District:	8,000
Northeast District:	5,000
Central District:	13,000
Connecticut Valley District:	10,000
Western District:	4,000

Wild Turkey

Wild Turkey Range and Harvest Evaluation

The 11th modern-day fall either-sex turkey season was held from October 30 to November 4, 2000. The zone included all of Berkshire, Dukes, Franklin, Hampden, and Hampshire counties and a portion of western Worcester county. A total of 109 turkeys was taken including 44 (41%) in Berkshire County, 19 (18%) in Franklin County, 15 (13%) in Hampden County, 14 (13%) in Hampshire County, 14 (13%) in the open portion of Worcester County, and 2 (2%) in Dukes County. There were 16 adult males, 24 immature males, 11 adult females, 21 immature females, and 27 unaged females taken. The harvest was undoubtedly affected by the poor hatch in the summer of 2000.

The 22nd Massachusetts spring gobbler hunt was held in April-May 2001. The season framework was the same as in 2000. The 4-week open zone included Berkshire, Essex, Franklin, Hampden, Hampshire, Middlesex, and Worcester counties. The 2-week zone included Barnstable, Bristol, Norfolk, and Plymouth counties. A total of 12,758 permit applications were received. A near-record harvest of 2,163 turkeys was attained (the 10th straight year over 1000 and the 3rd over 2,000). There were 347 persons (2.7%) who took their second bird in the bag, as compared to 333 persons (2.5%) in 2000. The overall estimated success rate for taking 1 turkey was 14.2% as compared to 14.0% in 2000. The Berkshire County harvest was 565 (26.1%), followed by Worcester (533, 24.6%), Franklin (360, 16.6%), Hampshire (231, 10.7%), Hampden (216, 10.0%), Plymouth (84, 3.9%), Essex (64, 3.0%), Bristol (56, 2.6%), Middlesex (29, 1.3%), Norfolk (17, 0.8%), and Barnstable (8, 0.4%). Adult males comprised 1,321 (61%) of the take, as compared to 1,135 (53%) in 2000.

Black Bear

Black Bear Distribution and Harvest Investigations

A near-record total of 2,329 bear hunting permits were issued for the 2000 hunting season. A total of 81 bears were taken during the 23-day split season, including 76 during the 1st segment and 5 during the 2nd segment. This was the first year of the 17-day September season. Fifty-eight males and 23 females were taken in Berkshire (n=33), Franklin (n=21), Hampshire (n=18), and Hampden (n=9) counties. There were 11 non-hunting mortalities (16 in 1999-00) including 9 road kills, one depredation kill, and 1 injured and euthanized. A total of 84 problem bear complaints was received (86 in 1999-00) primarily including 23 depredations on bird feeders, 22 residential complaints, and 19 trash and campground complaints. Additional untallied, but substantial, complaints were received by the Division of Law Enforcement.

The black bear field study conducted by the University of Massachusetts (in cooperation with MassWildlife) was shifted to MassWildlife in 1999. Eleven radio-collared bears were active in July 2000. One was killed in the

September 2001 hunting season and one subsequently slipped its collar. During winter 2001, eight of the remaining nine bears (three with newborn cubs, two with yearlings, and one barren) were captured in their winter dens and recollared if necessary. The one remaining bear (with 2 yearlings) bolted from its den prior to capture. However, it did not require a collar change. Six of seven yearlings from three females were captured, of which 3 were radio-collared. No bears were captured during a brief period of barrel trapping in June 2001.

Furbearer Program

The furbearer program is responsible for the management and research of fourteen species of wildlife in the Commonwealth. This group of species called furbearers includes beaver, muskrat, bobcat, eastern coyote, red and gray fox, river otter, fisher, striped skunk, mink, long-tailed and short-tailed weasel, raccoon and opossum.

Massachusetts' furbearers are abundant and widely distributed throughout the state. The populations of these species are scientifically managed and secure. None are threatened or endangered. The value of the Commonwealth's furbearer resource is very diverse and offers a variety of economic, ecological, cultural, biological, aesthetic and educational opportunities.

The furbearer management program presents many challenges to wildlife managers in the state who use habitat manipulation, public education and regulated hunting and trapping as tools in the management of these renewable resources in the Commonwealth. A combination of techniques is used to:

1. Control problem animals
2. Regulate wildlife populations
3. Reduce habitat degradation
4. Reduce crop and property damage
5. Aids in the recovery of endangered species
6. Allow a sustainable harvest of renewable furbearer resources.

These activities provide recreational and economic opportunity for citizens and households in the state. In this past fiscal year Massachusetts residents spent more than 1,700 days afield harvesting and viewing furbearer resources and spent more than \$ 12,400 while conducting harvest activities. A total of 1,974 furbearers were harvested in the 2000-2001 season. The harvest by species was 556 beaver, 14 bobcat, 95 coyote, 124 fisher, 16 river otter, 27 red fox, 37 gray fox, 300 raccoon, 59 mink, 55 skunk, 24 opossum, and 677 muskrat.

Regulated trapping is an important component of wildlife management programs. It is the most practical and effective method to control population growth within the target species. Regulated trapping conducted by trained, licensed members of the public is used by wildlife professionals to regulate wildlife populations and therefore reduces negative impacts associated with

high wildlife populations. Residents of the state derive financial benefits due to decreased property damage caused by furbearers, and decreased need to pay animal damage control agents.

The Massachusetts Division of Fisheries and Wildlife heavily regulates the harvest of furbearing animals through complex laws and regulations that govern trapping. These regulations include:

1. Mandatory licensing of trappers
2. Mandatory trapper training
3. Restrictions on the size of traps
4. Restrictions on types of traps
5. Restricted seasons for trapping
6. Restricted areas for trapping
7. Mandatory regular checking of traps
8. Mandatory tagging of traps to identify the owner.

Management and Research

Pelt sealing: Pelt sealing is used to gain information on the harvest and distribution of beaver, otter, red fox, gray fox, bobcat, coyote, mink, and fisher statewide. In addition biological information is gathered from selected species on the sex, age, and reproductive status of the animal. During the 2000-2001 harvest season, the Division sealed 928 pelts. Fur harvesters are required by law to turn over specimens of certain harvested species which are examined for sex, age, and reproductive status. The Division collected and conducted laboratory examinations on 154 specimens during the 2000-2001 season.

Wetland/beaver management: In November, 1996 a Ballot Referendum known as "The Wildlife Protection Act" or "Question One" was approved by voters in Massachusetts during the general election. This statute modified existing laws that regulated lawful traps for certain species of wildlife. Beavers are prolific rodents that occasionally cause problems to public and private property. A consequence of the trapping restrictions was decreased harvest of beaver during the regulated trapping season and a concomitant increase in the statewide population.

Between 1996 and 2000, the beaver population tripled and complaints about flooding increased. Typical complaints included: flooded septic systems, wells, roads, driveways and railroad tracks. In July, 2000 the Massachusetts Legislature passed and the Governor signed a new law that modified the restrictions on beaver and muskrat traps to provide relief for people suffering from flooding impacts caused by beaver or muskrat. An emergency permitting system was created at the town level with certain non-emergency permits for specific traps available from MassWildlife.

Staff have developed brochures that explain options to landowners discussing the positive and negative aspect of beaver activities, associated wetland values and overall management of beaver. The newest brochure is



Deer populations are thriving in the Commonwealth.

a "sister-document" to the "Beavers in Massachusetts" booklet and explains the use of water flow devices to address flooding problems caused by beaver. The new brochure has been distributed to libraries throughout the Commonwealth and is provided to the public free. Public education, regulated harvest, and the installation of flow devices are major components of this program. Goals for the management of beaver include managing them for their wetland values, regulating beaver populations within available habitat and minimizing economic damage to public and private property by beaver.

Wildlife Depredation and Damage: Division personnel responded to complaints about eastern coyotes, red foxes and gray foxes concerning the loss of domestic livestock and pets. Site visits were conducted and technical advice given in an attempt to eliminate or alleviate damage situations. Coyotes currently occur in all communities in Massachusetts except Martha's Vineyard and Nantucket. Complaints regarding eastern coyotes have come from more than 340 separate towns in the Commonwealth since 1990. Complaints regarding coyotes killing or harassing pet dogs and cats is of extreme concern to the Division as this behavior was not being exhibited by this species 10 years ago. Other complaints range from coyotes killing livestock and poultry to coyotes on airport run ways threatening the arrival and takeoff of aircraft.

Wildlife Health Program: Furbearer program personnel have been monitoring an outbreak of rabies in

raccoon populations along the eastern seaboard since 1977. This epizootic was documented in Massachusetts on September 16, 1992. The die-off of raccoons from this epizootic has been tremendous. The outbreak has peaked in the Commonwealth and has reduced the raccoon population.

Currently rabies is confirmed in 309 (85%) towns in Massachusetts. The geographic distribution of the outbreak now covers the entire Commonwealth except Cape Cod, Martha's Vineyard and Nantucket Island. From September 1992 – April 2001, 3,155 animals including, 1,984 raccoons, 936 skunks, 62 woodchucks, 58 foxes, 86 domestic cats, 10 cattle, 3 domestic dog, 5 coyote, 2 otter, 1 fisher and 6 others have tested positive. The Division developed informational brochures on zoonotic diseases that were incorporated into trapper education training and are available to the public.

White-Tailed Deer Program

In 2000, 11,160 deer were harvested during the legal statewide hunting seasons in Massachusetts including a record archery harvest of 2,811 deer, a shotgun harvest of 7,682, a primitive firearms harvest of 662, and 5 deer were harvested during the paraplegic season. This total was a 17% increase over the 1999 harvest, attributable to an increase in the antlerless deer bag limit in Deer Management Zones 10, 11, 12, 13 and 14. There were 903 more antlerless deer harvested in 2000 than the previous year in suburban communities in eastern Massachusetts where deer densities have exceeded our management goals. There were 71,688 licensed hunters in 2000, an 8.7% decrease from 1999 with 19,581 archery stamps and 17,158 primitive firearms stamps sold. Based on a mail survey, we estimate there are between 50,000 and 55,000 active deer hunters in Massachusetts. The Division issued 35,045 antlerless deer permits in 2000, raising \$175,225. Division biologists collected data at check stations across the state during the first 6 days of the shotgun season, examining about 32% of all deer harvested during 2000.

There was a new deer hunting regulation in place for the 2000 deer hunting seasons. Hunters were allowed to purchase additional antlerless deer permits that were not issued for DMZ 10, 11, 12, 13 and 14 until the allocation was reached, increasing the bag limit for antlerless deer in these Deer Management Zones. Another regulation passed in 2000 that will be effective for the 2001 deer seasons, moved the boundary for DMZ 10 from route 27 out to Interstate 495, which increases the size of DMZ 10.

During a controlled hunt at the Quabbin Reservation in central Massachusetts 106 deer were harvested. Deer densities at the Quabbin Reservation have been reduced from an estimated 40 to 60+ per square mile to about 10 to 15 per square mile, comparable to densities off-Reservation. Now, the Quabbin Reservation hunts are in the maintenance stage of deer population management, where less effort is required to keep deer densities at

tolerable levels. The Quabbin deer hunts have been successful in reducing deer populations, at minimal cost, using public hunting.

The Division's research program on deer populations continued and was expanded to include a graduate student through the University of Massachusetts-Amherst. No deer were captured and radio-collared in the Carlisle study area in northeastern Massachusetts during winter 2001, however efforts to supplement numbers captured during 1999 and 2000 will occur in the winter of 2001-2002. Only two radio-collared deer (of 33 collared deer) from the Carlisle study area were harvested during the 2000 hunting seasons. One male was harvested in the town of Ware during the shotgun season, and a female was taken in New Hampshire during the muzzleloader season. One deer was killed by an automobile, and three other mortalities occurred due to unknown causes in 2000. Two collared deer (of 19 collared deer) were harvested by hunters in the Myles Standish area in Plymouth and one additional mortality was recorded of unknown causes in 2000. Two radiocollared deer (of 18 collared deer) were harvested by hunters from the Western study area during the fall of 2000. One male was taken in Stamford, Vermont, and a second male was taken in Stephenstown, New York. Four deer were killed by automobiles in the Western study area and two additional mortalities occurred due to unknown causes. Two deer slipped their collars in early spring. During the winter 2000-2001 efforts were focused on capturing deer in the Western study area and 27 new deer were radiocollared. Eight of these deer died due to winter and capture induced stress shortly after capture, but the 28 remaining deer will be monitored for survival over the course of the study and additional deer captured during winter 2001-2002 will be added to the sample.

In general, the white-tailed deer herd in Massachusetts is in excellent condition and has reached the density goals in most areas, though still exceeding the goals in several areas. One major regulatory change was enacted for the 2000 hunting seasons, increasing the bag limit of antlerless deer in the eastern Massachusetts Deer Management Zones to try to encourage hunters in suburban areas with high deer population growth rates and levels of deer-human conflicts. The Division has taken a proactive approach to deer management and will try to address conflicts before they arise and while they are still manageable. This should result in increased opportunities for Massachusetts's deer hunters and ultimately the retention of the high value placed upon white-tailed deer by the public at large.

Forestry Program

The Forestry Program is a component of the MassWildlife Biodiversity Initiative, which seeks to maintain and restore the native diversity of flora and fauna through active land management. The Forestry Program focuses on creating a distribution of successional stages (from early-seral to late-seral forest) in a landscape context that will maintain biological diversity.

The forestry program's objectives are:

- 1) Build a forest inventory data base, prepare a forest cover type map using the Massachusetts Geographic Information System (MASS-GIS), and establish property boundary lines in the field for each wildlife management area (WMA).
- 2) Use inventory data to design and carry out both commercial forest cutting operations and non-commercial management activities that maintain biological diversity.
- 3) Conduct biological monitoring to determine the response of wildlife populations to forest cutting operations.

The Forestry Program leader and two full-time foresters conduct commercial cutting operations in compliance with Division forest management guidelines. The guidelines provide a sequential checklist of steps for each sale to insure that landscape conditions are assessed, and that management activities reflect landscape conditions. Prior to any cutting operation, Division foresters consult with District staff to address local access and aesthetic issues, and with personnel from the Division's Natural Heritage & Endangered Species Program to conserve state-listed species and priority natural communities on WMAs. All forest management activities receive permits from the Department of Environmental Management under the Massachusetts Forest Cutting Practices Act.

Forest Inventory & GIS Mapping

Division foresters completed an accuracy assessment for an on-going landcover mapping effort in a pilot area of the Central District, followed by the Northeast and Southeast Districts, and the balance of the Central District in FY-2001. Landcover mapping of MassWildlife's lands and their environs (about 325,000 acres) was acquired through contract with Landmark Applied Technologies, of Bucksport, Maine in FY-2000. Accuracy assessment of the mapping effort is based on the random selection of sufficient interpreted polygons to provide an 80% confidence interval. Polygons are selected proportionate to their level of occurrence; a greater number of polygons for relatively common community types (e.g., Northern hardwood forest) are selected vs. relatively uncommon types (e.g., kettlehole bog). About 160 total polygons were selected for field assessment in each of the areas completed to date (Pilot area, Northeast, Southeast, and Central Districts). More than 600 polygons were assessed in FY-2001.

Five random sample points were selected within each polygon chosen for assessment, and observers used GPS units to traverse between points. They subsequently recorded and observed community type, development stage, and canopy density for each polygon. All community types used in this mapping effort were adapted from the Draft Natural Community Types of Massachusetts (MA Natural Heritage & Endangered Species Program). Adaptations were required to create decision rules for interpretation that made communities mutually exclusive.



Foresters Anne-Marie Kittredge and John Scanlon monitor wildlife use of plants in areas that have been cut.

Community Types

The most general level of forest community interpretation uses three broad classes: hardwood, softwood, and mixed hardwood/softwood. At this general level, accuracy has ranged from 82-96% to date (Table 1). The majority of error at this general level of interpretation has involved misidentification of mixed stands as either pure softwood or pure hardwood. A mixed stand occurs when both hardwood and softwood trees comprise >25% of the forest overstory. For example, a stand with 70% softwood and 30% hardwood is mixed, but such stands can appear to an interpreter to be pure softwood when using spring photography with limited hardwood leafout.

A more detailed level of forest community interpretation uses ten specific classes, including central hardwoods (oak-hickory forest), northern hardwoods (beech, birch, and maple), conifer (white pine and hemlock) forest, forested wetland, and various combinations thereof. For land managers using the community type map, it is important to know where error in interpretation among forest community types occurs, and how serious the error is. MassWildlife evaluated three levels of error, where a level I error is relatively minor, a level II error is more substantial, and a level III error is serious. A level I error involves misinterpretation of a polygon as a community type that is most similar to the

actual type. For example, interpretation of a pure northern hardwood forest community as a mixed northern/central hardwood community constitutes a level I error. Any level I error is correct within both the hardwood/softwood/mixed, and upland/wetland contexts.

Level II errors can occur both within a general forest class (e.g., within the hardwood class, misinterpretation of northern hardwoods as central hardwoods) and among general forest classes (e.g., misinterpretation of northern hardwoods as mixed northern hardwood/softwood). Level II errors can violate the hardwood/softwood/mixed context, but not the upland/wetland context. All other misinterpretations constitute serious, level III errors (e.g., misinterpretation of a red maple swamp as upland forest).

It is considerably more difficult for an interpreter to differentiate among the various hardwood communities (e.g., central hardwood, northern hardwood, and mixed hardwood), and various mixed communities (e.g., central hardwood/softwood, and northern hardwood/softwood) used in this mapping effort. Accuracy at the forest community level has been substantially lower (£70%) than at the more general hardwood/softwood/mixed level (82-96%) to date (Tables 1, 2 and 3). Partitioning of interpretation error into three levels of increasing severity (Level I-III) has helped to understand how interpretation errors impact the usefulness of the landcover maps (Tables 2 and 3).

The forest community accuracy after accounting for Level I error is probably the best indication of how useful the landcover maps are for planning management actions because these relatively minor errors will not alter silvicultural prescriptions substantially. Forest community accuracy ranges from 77-89% (Tables 2 and 3) after accounting for Level I error.

Table 1. MassWildlife Landcover Mapping Accuracy Levels for General Forest and Non-Forest types.

	General Forest Types		Non-Forest Types	
	User ¹	Producer ²	User ¹	Producer ²
Pilot Area	96%	94%	83%	87%
Northeast District	82%	82%	85%	85%
Southeast District	89%	89%	91%	91%
Central District	92%	90%	85%	91%

¹User accuracy compares the total number of polygons interpreted as type 'x' with the subset of those polygons observed in the field to be type 'x'.

²Producer accuracy compares the total number of polygons observed in the field to be type 'x' with the subset of those polygons interpreted as type 'x'.

Table 2. Overall producer's forest community accuracy, and corresponding accuracy after accounting for Level I-III errors.

		Error Level		
		I	II	III
Pilot Area	63%	88%	92%	100%
Northeast District	68%	77%	83%	100%
Southeast District	66%	81%	86%	100%
Central District	68%	87%	91%	100%

To date, the landcover mapping effort has confirmed that both early- and late-seral forest are lacking on WMA lands and their environs. The landcover maps identify sawtimber stage forest stands that can either be moved forward into a late-seral forest condition through passive management, or moved back in succession to early-seral forest through active management.

Forest Cutting Operations & Management Activities

No new timber sales were prepared in FY-2001 due to the focus on the landcover mapping effort described above. Two timber sale contracts were awarded in FY-2001 for sales that were prepared in FY-2000. Sale preparation includes marking of trees to be cut, marking of trees to be retained, location of wetland resource areas, rare species habitat, and priority natural communities, lay out of temporary access roads, and preparation of Chapter 132 Forest Cutting Plans. All sales were prepared in compliance with the Division's Forest Management Guidelines. The guidelines seek to create a distribution of forest successional stages (from early-seral to late-seral forest) in a landscape context that will maintain biological diversity.

Intensity of cutting varies from moderate (group shelterwoods) to high (Aggregate Retention Cuts - ARCs), but groups of mature trees are retained on all sites. Planned harvests are designed to regenerate mixed stands of white pine, red and white oak, and high quality northern hardwoods including black cherry and white ash.

A portion of the monetary value for all sales is realized in the form of 'In-Kind' services on the WMAs. Services

include grading, liming, fertilizing and seeding of land-ing areas, improvement and subsequent stabilization of existing woods roads using Massachusetts Best Management Practices (BMP's), and felling and slash reduction of non-merchantable trees to encourage regeneration of desired tree species and enhance early-successional wildlife habitat.

All income from a timber sale is generally not received in the same fiscal year the sale is marked. When a sale is awarded through the public bid process, the qualified vendor submitting the highest bid is awarded the contract. Ten percent of the high bid is due at the time the contract is awarded, and the balance (90%) is due prior to the start of cutting. Vendors are given up to two years to begin cutting so that they can take advantage of market conditions.

Biological Monitoring

Breeding bird surveys were conducted on portions of the Hiram Fox WMA in Chester, the Fox Den WMA in Worthington, and the Ware River Watershed forest in Oakham in June, 2001. Forest regeneration plots were established on a portion of the Peru WMA in June 2001.

Future Work

Work planned for fiscal year 2002 includes completion of accuracy assessment for the GIS land-cover mapping effort, conducting a landscape-scale planning exercise for future timber sales, and expanding the existing forest inventory into a more comprehensive natural resources inventory.

Table 3. Overall user's forest community accuracy, and corresponding accuracy after accounting for Level I-III errors.

		Error Level		
		I	II	III
Pilot Area	64%	89%	91%	100%
Northeast District	68%	77%	86%	100%
Southeast District	66%	81%	86%	100%
Central District	70%	89%	92%	100%

Massachusetts Cooperative Fish and Wildlife Research Unit

White-tailed Deer Population Ecology in Massachusetts: Division research programs on deer populations continued in the Plymouth area, Carlisle area and Windsor area. Deer were captured and radio-collared in the latter two areas to estimate population density and survival rates. Research is winding down in the Plymouth area as we determined that the population is between 16 to 20 deer per square mile and growing. Deer are long lived and hunting mortality is low. Research in the other two study areas is continuing as Master's Degree Candidate Chris Gaughan is in his second year of a three year study.

Beaver Ecology in Massachusetts: The Division is beginning a research initiative to study beaver ecology in rural, western Massachusetts and suburban, eastern Massachusetts. The beaver population is growing due to harvest restrictions following the 1996 ballot referendum that prohibited the use of foothold traps and restricted the use of Conibear traps. Beaver are fitted with radiotags on their tails. The objective is to study population ecology (i.e. growth and density), habitat occupancy of wetland areas, and survival. Ph.D. candidate Chrissie Henner is in her first year.

Wildlife Staff

Robert D. Deblinger, Ph.D.

Assistant Director for Wildlife Research

Richard Burrell, *Coordinator, Wildlife Management Areas*

James E. Cardoza, *Black Bear / Turkey Project Leader*

Thomas Early, *Wildlife Biologist*

Marcia Hartleb, *Secretary*

H Heusmann, *Waterfowl Project Leader*

Anne-Marie Kittredge, *Forester*

Susan Langlois, *Furbearer Project Leader*

John McDonald, Jr., Ph.D., *Deer Project Leader*

John Scanlon, *Forestry Project Leader*

William Woytek, *Wildlife Technician*

Ayer Game Farm

Stephen Foster, *Manager*

Mark Brideau

Shawn O'Malley

John Sheedy

NATURAL HERITAGE & ENDANGERED SPECIES PROGRAM

Dr. Thomas W. French
Assistant Director

New for 2001

The most exciting new development of FY 2001 was the establishment of the BioMap project. Initiated by the Secretary of Environmental Affairs through bond funds, this project uses state of the art Global Information System (GIS) technology to analyze two decades of Natural Heritage and Endangered Species Program data. Already, the value of this effort in land acquisition and conservation planning has been immense.

The Biomap Project

The variability of the Massachusetts landscape, from the sands of Cape Cod and the Islands to the mountains of the Berkshires and Taconics, results in a tremendous wealth of biological diversity. The rapid pace of development in Massachusetts threatens our biodiversity across the state, as habitat for rare species and important natural communities are continually being fragmented and often lost. Many key components of biodiversity in Massachusetts lack sufficient protection for their long-term survival. To provide a new tool for biodiversity protection, in April 2000 the Secretary of Environmental Affairs, Bob Durand, provided 1.5 million in bond funds to the Natural Heritage and Endangered Species Program (NHESP) to produce a BioMap for Massachusetts.

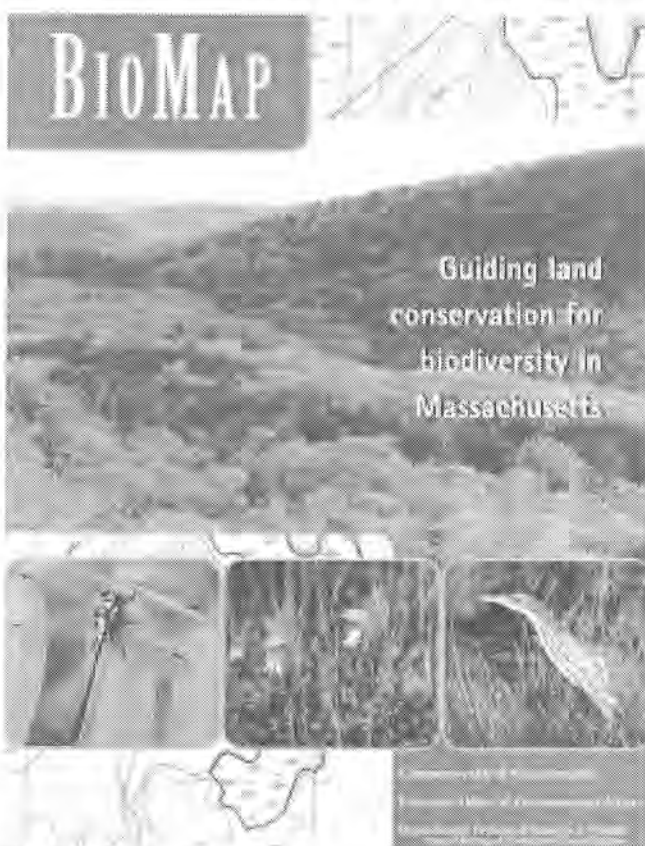
The BioMap was developed by the NHESP as an innovative way to provide information on important areas for biodiversity to communities across Massachusetts, to inform strategic land protection as well as community preservation planning. It identifies and maps the areas of the state that are the most crucial to protecting the full breadth of the state's biodiversity. This map will help conservationists prioritize land protection efforts in order for both rare and common species to persist in Massachusetts. It provides a comprehensive, landscape-level approach to land conservation planning that can be used at both state and town levels.

To create the BioMap, NHESP hired 15 additional staff members, including ecologists, botanists, zoologists, a project manager, a data management assistant, and a geographic information systems (GIS) specialist. These staff members have systematically evaluated over 7,000 site-specific records of rare plants, rare animals, and natural communities in the Natural Heritage database collected over the past 22 years. Natural Heritage staff transformed these data into the BioMap by identifying and mapping the most viable rare species habitats and natural communities, collectively termed "Core Habitat"

areas. They have also developed a computer model that identifies large, minimally fragmented "Supporting Natural Landscape" areas that buffer Core Habitats and provide habitat for common species and communities.

Rare species and natural community data are the basis of the BioMap Core Habitat areas. Protection of exemplary occurrences of each natural community type will provide a "coarse filter" method to conserve biodiversity within Massachusetts. The protection of additional specific rare species locations will serve as a "fine filter" by including those elements of biodiversity not captured through the coarse filter approach. The viability of each occurrence, in combination with the rarity of each species or community type, determines which rare species populations and which natural community examples are included on the BioMap.

Through the GIS, the mapped species and natural community occurrences were merged to create BioMap Core Habitat polygons. These Core Habitats were buffered and connected via a GIS analysis in order to develop



The BioMap was published as a guide to land conservation for Biodiversity.

a network of functional sites across the state. The analysis was designed to help protect the ecological processes and patterns that support the component species and natural communities of Core Habitat over the long term. The GIS analysis was based on the following factors: proximity to Core Habitats; size, configuration, and integrity of natural vegetation patches; size and configuration of "roadless" blocks; and presence of largely protected and undeveloped sub-watershed basins. A panel of outside experts in different disciplines was convened to provide peer review, and their comments were incorporated into the final version of the BioMap.

The BioMap shows the most significant areas in Massachusetts that need to be protected to preserve the breadth of biological diversity of the Commonwealth. Natural Heritage staff developed an attractive publication and poster for the general public, "BioMap: Guiding Land Conservation for Biodiversity in Massachusetts," as well as a "BioMap Technical Report," which presents a detailed description of the methodology used to create the BioMap. These publications are available without cost from the NHESP. They have been distributed to towns, state agencies, land trusts, and private conservation groups. The statewide BioMap coverages are also available via the EOE's MassGIS web site. Town BioMaps will be printed and distributed in 2002.

Through the BioMap project, Natural Heritage staff have added hundreds of new records, updated hundreds more, and systematically reviewed several thousand records to assess the quality and viability, or probability of long term persistence, of each population or natural community. The spatial data corresponding with each record was transformed into digital format. As a result, the state of knowledge about Massachusetts' biodiversity has been vastly improved, as both the quality and quantity of information on rare species and natural communities have been increased. The project also resulted in the development of improved quality control standards and systems for data management, and allowed for the processing of over 1500 backlogged records.

The first experimental translocation of Puritan Tiger Beetles was completed. These tiger beetles were relocated from a site on the Connecticut River in Connecticut to a site along the river in Massachusetts.

2000 Field Season Summary

Animals

Piping Plover: Piping Plover were observed nesting at 102 sites; 38 additional sites were monitored but no breeding pairs were detected. The Index Count (conducted during a standardized nine-day period) yielded 484 pairs (a 2.8% decrease from 1999), and the Adjusted Total Count (estimated total number of pairs that nested during the entire season) was 496 pairs. Overall, 44% of nests hatched > 1 egg, 41% of eggs hatched, and 47% of chicks fledged. Overall productivity for 487 of 496

pairs (98%) was 1.09 chicks fledged per pair, the lowest since 1987. The most common cause of nest loss was flooding, followed by abandonment and predation. Harassment by predators and severe inclement weather were primary suspected causes of nest abandonment. Exclosed nests were abandoned more frequently than were unexclosed nests (19% vs. 8.5%); however, nest success was higher for exclosed nests than for unexclosed nests (67% vs. 38%). The most frequently identified nest predators were crows, followed by skunks. Storms resulted in the loss of 178 nests to flooding and were implicated in the disappearances of approximately 100 chicks. Observers reported an unusually high number of instances (thirteen) of re-nesting by plover pairs that had lost chicks. Eleven adult plovers were found dead during the season.

Terns: During the summer of 2000, the annual tern nesting survey reported activity at 67 sites out of a total of 114 sites reported active in at least one year from 1970 to the present. Common Tern numbers declined 6% to 13,340 pairs, reversing seven consecutive years of increase. Roseate Tern numbers, however, increased 17% to 2,124 pairs, marking the first time their numbers have risen above the 2,000 pair level since 2,023 were estimated in 1979. Since 1970, the highest Roseate Tern estimate was 2,300 pairs in 1972.

Least Tern numbers were estimated at 3,276 pairs, down 4% from the year-earlier level. Laughing Gull numbers grew 36% to 1,097 pairs, the first time their numbers have exceeded the 1,000 pair mark since 1991. Small numbers of Arctic Terns (8 pairs) and Black Skimmers (2 pairs) were also found nesting in the state.

For the second year in a row, Red Fox activity precluded nesting at Plymouth Beach. Although some 1,000 pairs of Common Terns appeared early in the season, they quickly abandoned the site. Presumably many relocated to the immense colony on South Monomoy Island, Chatham. Nesting at New Island in Eastham/Orleans was unproductive due to Great Horned Owl predation. Despite these trouble spots, 81% of all the Common Terns in the state, which were concentrated at three sites South Monomoy Island in Chatham, Ram Island in Mattapoisett and Bird Island in Marion, experienced good to excellent productivity. Weather conditions during the season were generally benign, except for an unseasonable northeast storm that struck on June 6th, washing out some nests, particularly those of Least Terns at exposed sites.

Bald Eagle Project: Ten (10) Bald Eagle territories were identified during the 2000 nesting season (Quabbin Reservoir-4, Connecticut River-4, Pocksha Pond, Middleborough-1 and Farmington River-1). No new sites were discovered this year. Active nests were identified in each territory. Twelve (12) young were produced from 6 nests for a productivity of 2.00 yg./successful nests (1.2 yg./occupied territory). Since 1989, 116 young eaglets have fledged from Massachusetts nests. Assuming 50 percent cumulative mortality, the pool of these



Roseate Tern numbers topped 2,000 for the first time since 1979!

birds in the 5-10 year old age bracket increased to 23 as of the 2000 nesting season.

The January 2000 Midwinter Bald Eagle Survey estimated 60 Bald Eagles and 1 Golden Eagle in the state. The Bald Eagle count represents a nine percent drop from 66 located in 1999. The 2000 total includes 47 adults and 13 immatures. In addition to our four major eagle wintering areas (Quabbin, Connecticut River, Merrimack River and Assawompsett Pond), birds were located at eight other sites, for a total of 12 sites, up from 9 a year earlier. During this season's survey period, warmer than normal temperatures and mostly unfrozen waters led to more eagles being reported from non traditional sites. The pattern of eagle reports suggested that birds were moving about more than usual. The Quabbin Reservoir and Connecticut River were surveyed with the aid of a helicopter supplied by the National Grid USA/Massachusetts Electric Company.

Common Loon: During the 2000 nesting season, territorial loons were reported from 7 waterbodies, as has been the case since 1997. The number of territorial pairs increased by 3 (16%) to 22, which is the highest number of territorial pairs reported since nesting loons reappeared in the state in 1975. All of this increase occurred at Quabbin Reservoir with the increase there from 10 to 13 territorial pairs. Fifty-nine percent of the state's territorial loons were at Quabbin Reservoir, with 18% (4 pairs) at Wachusett Reservoir. Single pairs occupied 5 other waterbodies.

The robust growth in territorial pairs was not, unfortunately, reflected in the number of confirmed nesting pairs (pairs that actually laid eggs), which grew only 10% from 10 to 11 pairs. The low number of nesting pairs reported in 2000 is likely due to a combination of factors including a lack of suitable natural nesting islands, high water levels and a shortage of available nesting rafts. A

shortage of personnel available for monitoring loons, particularly at Quabbin, likely also contributed to the low number of confirmed nesting pairs reported. With infrequent visits during periods of heavy rains and rising water levels, nests can be initiated and fail before they are even discovered.

Thus, only half the territorial pairs were confirmed nesting in 2000. Of the 11 nesting pairs, 5 were at Quabbin Reservoir, 3 were at Wachusett Reservoir and singles were at 3 smaller lakes.

Seven of the nesting pairs were successful, compared with 5 a year earlier. Nine chicks were presumed to have fledged, compared to 7 in 1999. Estimated productivity was 0.82 chicks/nesting pair, a slight increase over the 0.70 reported in 1999.

Peregrine Falcon: All four of the traditional nesting pairs were successful with a total of 10 chicks fledged. The Customs House pair in downtown Boston raised 4, the Christian Science Church administration building pair raised 3, the pair on Monarch Place in Springfield raised 1, and 2 were raised on the Braga Bridge in Fall River.

Hiram Fox WMA Forest-nesting Bird Surveys: Begun as a pilot survey in 1987, data have been collected during early June in every year except 1998. Standard point survey methodology is employed, with data collected at 100 forest stations. Information from this survey has revealed little change in overall birth numbers and species composition on the property over the past 13 years. This suggests that bird populations in unfragmented forested landscapes continue to be quite stable. There has been some decline in species diversity, as forest openings created in the early 1990s have reverted to forest, resulting in a loss of some early successional species and a decline in the numbers of others.

In 11 survey years from 1988 through 2000, an average of 1,118 total individuals representing 59 species were recorded. In 2000, 957 individuals of 54 species were found. This was the smallest number of individuals tallied since the surveys began. Previously the lowest year was 1999 with 1,005 individuals and the best year was 1997 with 1,272 individuals.

The re-growth of forest clearings seems to be responsible for a downtrend in species richness. For example, Alder Flycatcher, Eastern Kingbird, Gray Catbird, Chestnut-sided Warbler, Mourning Warbler, Indigo Bunting and White-throated Sparrow have disappeared or declined to trace occurrences. On the other hand, populations of deep forest species remain robust.

The 10 species recorded most frequently on the property in 2000 were: Red-eyed Vireo 181, Ovenbird 131, Black-throated Green Warbler 65, Veery 56, American Redstart 55, Yellow-bellied Sapsucker 49, Wood Thrush 46, Blackburnian Warbler 37, Scarlet Tanager 36 and Black-capped Chickadee 34.

Plymouth Redbelly Turtle: A total of 38 nests were discovered and protected. By October 2001 they had produced 385 hatchlings. Of these 229 were released directly to the wild and 156 were held for headstarting.

This year the second adult female which had been headstarted was found laying her own eggs. This turtle was hatched in 1987 and raised at the Berkshire Museum in Pittsfield. When hatched her shell length was 29.6 mm, when released about nine months later in June 1988 it was 128.8 mm, and when found nesting on June 10, 2001 her shell length was 284.0 mm.

Puritan Tiger Beetle: The Program continued a cooperative management and research collaboration with the USFWS Conte National Wildlife Refuge. The goals of the effort are to increase understanding and improve the viability of this animal which is federally listed as threatened. The USFWS continued to fund a position responsible for monitoring the population, maintaining signs and providing information to the public. The ecological restoration program supported research designed to increase understanding of larval habitat requirements. Evaluations of the necessity for supplementing the population with larvae collected at Connecticut sites were performed and the first experimental translocation was completed.

American Burying Beetle: In 2000, there were two releases of the state and federally listed endangered American Burying Beetle carried out on Nantucket Island by the U.S. Fish and Wildlife Service, Roger Williams Park Zoo, and MassWildlife. On June 29th, 63 pairs were released and another 62 pairs were released on July 10th. Each of these pairs was captive raised from Block Island, RI origin. At the time of release, each pair was provided with a food item on which to lay eggs. Thirty broods were checked about 10 days after each release and the number of beetles estimated to have been produced in the next generation was 938.

A pre-release survey was conducted for four consecutive nights beginning on June 26th. A total of 560 trap nights using baited pitfall traps yielded four species of burying beetles (*Nicrophorus* sp) and four species of silphid beetles. A total of six American Burying Beetles were captured, marked, and released. Five of these were captured at the release site and one was trapped at a site about 2.5 km west of the release site.

A post release survey was conducted at three sites on three consecutive nights beginning on July 21st. A total of 180 trap nights yielded 18 American Burying Beetles at the release site and one at a site 1 km NE of the release site. Only one of these beetles was an untagged wild beetle. The others were all beetles that had been tagged and released.

On Penikese Island where the last release was done in 1993, one wild American Burying Beetle was captured on June 1, 2000.

Northeastern Beach Tiger Beetle: The Program contracted with Dr. Philip Nothnagle to direct monitoring and research efforts for the Northeastern Beach Tiger Beetle on Martha's Vineyard and in Bristol County. A peak count of 330 adults was counted at the primary site on Martha's Vineyard in early July. As in past years, adults were more numerous on wide, sandy sections of the beach than on narrow or stony sections. Seventeen adults were tallied at a secondary site to the east on Martha's Vineyard on July 23. A maximum of only 5 adults was counted in Bristol County, but this was likely an underestimate of the actual population due to overcast and cool conditions and because no counts were made in mid-July when more adults could have been expected to be active. Counts at both the primary Martha's Vineyard site and in Bristol County remained well below peak counts obtained during the 1990s. Continued beach erosion seems to be reducing habitat quality and availability at both primary sites. In 2000, Dr. Nothnagle and biologists from the U.S. Fish and Wildlife Service began a project to establish a self-sustaining population of this species at Monomoy National Wildlife Refuge on Cape Cod, by translocating and releasing a small number of beetle larvae taken from Martha's Vineyard.

Plants

Sandplain Gerardia (*Agalinis acuta*): State and Federally listed as Endangered. Recovery efforts for this species continued to go well overall in the summer of 2000. Seasonally adjusted mowing management at two sites on Cape Cod where the species was rediscovered in the early 80s, with only a few plants at each site, yielded 4,757 plants at one site (highest number yet recorded) and 1,865 (decline due to errors in private mowing). A natural population on Martha's Vineyard discovered in 1994 yielded a count of 1315 plants, most with exceptionally good vigor and seed set. An experimentally established population on DEM property, which was started in 1994, had an estimated 30,000-60,000 plants, and another experimental population started in 1997 on DFW property yielded 1,447 plants following a spring

mowing treatment. Small restoration plots at new sites on the Vineyard yielded 23 and 11 plants respectively. In addition a tiny new colony of three plants was discovered on the Vineyard. Seed bank study plots on the Cape, which have been studied since 1996, yielded plants after a three year lapse indicating that seeds can remain viable in the soil for at least four years.

Small Whorled Pogonia (*Isotria medeoloides*): State listed as Endangered and Federally listed as Threatened. The fate of this species in Massachusetts is uncertain. A Worcester County population, the largest in the state, declined slightly for the first time since monitoring began in 1994. The population had 111 plants, 30% of which were mature fruiting individuals. This represents about a 10% decline from 122 plants in 1999. This is not alarming, but the first decline in a steadily upward trend for the population. An Essex County population, formerly the largest in the State, continued to show low numbers, only 9 plants. Deer browsing is suspected to be the main reason for the decline. An enclosure was built at a privately owned site nearby where one plant was rediscovered in the spring. A single plant was seen at a Hampden Co. site being impacted by Off Road Vehicles. It seems that this once healthy population is about to be lost.

Northeastern Bulrush (*Northeastern bulrush*): State and Federally listed as Endangered. No plants were seen at the Franklin Co. site, the State's only known site for the species. It has not been seen at the site since 1996 when 4 plants were reported.

New England Plant Conservation Program: The New England Wild Flower Society received a grant to produce 100 Rare Plant Conservation Plans over a five year period for species determined to be rare throughout New England. Five of the first set of plans were subcontracted to NHESP, and thus work was begun by three subcontractors on plans for the following taxa: Eastern Silvery Aster (*Aster concolor*), Lesser Snakeroot (*Eupatorium aromaticum*), New England Boneset (*Eupatorium leucolepis* var. *novae-angliae*), Inundated Horned Sedge (*Rhynchospora inundata*), and Narrow-leaved Vervain (*Verbena simplex*). Plant Conservation Volunteers with the Program numbered 117. They relocated 92 rare plant occurrences, but were unable to find 109. Significant finds included: Lion's Foot (*Prenanthes serpentaria*) in Woburn (undocumented since 1895), New England Blazing Star (*Liatris scariosa* var. *novae-angliae*) in Sandwich (undocumented since 1949), Lily-leaved Twayblade (*Liparis lilifolia*) in S. Hadley, and a new site for Long's Bulrush (*Scirpus longii*) on DFW land in Essex Co. Fourteen management actions were also completed by N.E.P.C.O.P. volunteers.

Invasive Plant Species: A Plant Evaluation Subcommittee of the Massachusetts Invasive Plant Working Group began work on formally evaluating species listed as invasive in the DFW's publication, "A Guide to Invasive Plants in Massachusetts." Criteria for the evaluation were adopted by the Working Group in January, 2000.

Biomap Project: Botanists Melissa Dow and Pamela Polloni re-ranked approximately 1,681 occurrences for 247 of the Commonwealth's rare plant species, using newly developed state standards they prepared for the Program's data management system. Additionally, the project's reevaluation of the database records resulted in rarity rank changes for 65 plant species on the official state list of rare plants.

Small Research Contract Program

The following projects were undertaken in FY 2001 under the Program's Small Research Contract Program:

BioMap / AquaMap:

- Martin Aliberti: Survey of Nantucket Island for freshwater aquatic invertebrates.
- Tom Dodd: Survey for Falcate Orangetip butterfly in western MA.
- David McLain: Survey of the Monhan River watershed for the federally endangered Dwarf Wedgemussel.
- Blair Nikula: Survey for Hine's Emerald dragonfly in western MA.
- Don Pugh: Survey of the Fort River in the Connecticut River watershed for the federally endangered Dwarf Wedgemussel.
- Russell Winchell: Survey of Paskamanset River in New Bedford for rare invertebrates.

Boston Harbor Islands:

- Scott LaGreca: Survey for bryophytes and lichens on the harbor islands.
- Mark Mello: Survey of the harbor islands for butterflies, moths, odonates, and tiger beetles.
- Douglas Smith: Survey for freshwater, non-insect invertebrates on the harbor islands.

Ecological Restoration:

- Bruce Lindwall: A botanical survey of Montague Plains.
- Brian Reid: Survey of aquatic invertebrates associated with coastal plain ponds.

Blue-spotted Salamander:

- Bryan Windmiller: Continued monitoring of a Blue-spotted Salamander population in Sudbury.

Statewide (NHESP Operating funds):

- Wendy Culbert: Natural community classification of select communities on Martha's Vineyard.

- Christopher Davis: Survey for Cobblestone Tiger Beetles.
- Leah Gibbons: Survey for Banded Bog Haunter dragonfly in southeastern MA.
- Terry Graham: Monitoring nesting of Plymouth Redbelly Turtle nesting.
- Kristin Lewis: A comparative study of the defensive chemistry of native and invasive non native species of mustards.
- Jim MacDougall: Survey for Banded Bog Haunter dragonfly in northeastern MA.
- Mark Mello: Management and monitoring of Piping Plover at selected sites in Bristol County.
- Owen Muise: Continuation of survey for Barrens Tiger Beetle in southeastern MA.
- Philip Nothnagle: Monitoring of the federally endangered Northeast Beach Tiger Beetle.
- Donald Padgett: Study of reproduction in Long's Bittercress.
- Ming Lee Prospero: Monitoring of the re-introduced American Burying Beetle population on Nantucket.
- Tom Rawinski: Survey of the Charles River for Long's Bulrush.
- Susan Williams: Inventory of mosses and liverworts of MA.
- Sally Zielinski: Population studies of Britton's Violet.

Environmental Review

A total of 1,444 environmental reviews divided into five review categories were processed as follows:

<u>Review Type</u>	<u>Count</u>
Conservation Plan	10
Forest Cutting Plan	85
MA Endangered Species Act	595
Notices Of Intent	722
Water Management Act	32

Vernal Pools

583 new vernal pool certifications were processed in the 2001 fiscal year.

Massachusetts Aerial Photo Survey of Potential Vernal Pools: In FY 01 the Natural Heritage & Endangered Species Program produced the Massachusetts Aerial Photo Survey of Potential Vernal Pools. The Vernal Pool Ecologist interpreted potential vernal pools from over 10,000 individual photographs between August 1 and December 1, 2000. Locations of Potential Vernal Pools were digitized by three assistants. Writing and

publication of the survey booklet was completed during the months of December and January, and printing was completed in January. 3,500 copies of the publication were produced along with a compact data disc produced by MassGIS for distribution of the survey.

Vernal Pools for Educators workshop series: The NHESP produced a series of 7 workshops in collaboration with the Vernal Pool Association at Reading Memorial High School in the spring of 2001. The Vernal Pools for Educators workshops are full-day workshops for teachers who wish to get involved in vernal pool studies as a science, interdisciplinary, or community outreach activity. Workshops were aimed primarily at the middle and high school educators, teaching biology or environmental topics. The workshops provided classroom instruction on vernal pool natural history and ecology, and developed interdisciplinary concepts by bringing in writing, art and graphic presentation, and civics. Attendees were provided with an array of educational materials and resources that facilitate the incorporation of vernal pool topics into classroom activities and lessons. Workshops were conducted in Wellfleet, Reading, Princeton, Wilbraham, Stockbridge and two locations in Hudson. A total of 162 educators attended the workshops.

Data Management & Data Products

Between July 1, 2000 and June 30, 2001, a total of 721 new records were entered into the Natural Heritage and Endangered Species Database. These included records for 208 certified vernal pools, 347 rare animal sites, 90 rare plant sites, and 76 natural communities. A total of 1,120 previously documented records were updated.

Land Protection

In fiscal year 2001, the Massachusetts Division of Fisheries & Wildlife (DFW) expended roughly \$10 million to protect over 12,000 acres of land across the state, bringing our total holdings to more than 120,000 acres. Nineteen of these recent acquisitions – about 2,300 acres – are home to state-listed rare species and exemplary natural communities. Below are just some of the acquisitions that are significant to NHESP.

MassWildlife (working with the Stockbridge Land Trust) acquired 700 acres on Monument Mountain and Agawam Lake in Great Barrington and Stockbridge, protecting a variety of calcareous habitats that together support six known state-listed rare plants. Elsewhere in the Western District, 45 acres of important upland were acquired in Goshen to help buffer a high quality Acidic Level Bog, and in Richmond, 90 acres were added onto the existing 111 acre Fairfield Brook Natural Heritage Conservation Area enhancing protection of calcareous wetlands, rich woods, and seven known state-listed rare plants. In the Connecticut Valley, 243 acres were added onto the existing 54 acre Whately Great Swamp WMA, helping to protect probably the best remaining example of a Tupelo-Pin Oak-Swamp White Oak community in the

state. Further downriver, critical freshwater mussel habitat is now being buffered by the purchase of 15 acres along the Mill River. In Holyoke, 157 acres were acquired on East Mountain to protect a vernal pool complex that provides critical habitat for state-listed rare salamanders.

In the Central District, the Mine Brook WMA was established with the acquisition of 708 acres in Douglas and Webster. This large area is home to three state-listed rare turtles and abuts the 2,500-acre Douglas State Forest. In Brookfield and West Brookfield, 53 acres were added onto the Richardson WMA, protecting a population of an endangered bulrush. In the Northeast District, acquisition of over 310 acres from the New England Power Company created the new Salisbury Marsh WMA, protecting a high-quality example of salt marsh. Eighty acres on Triangle Pond in Sandwich, a Coastal Plain Pond and home to several rare plants, was acquired at a bargain sale from the Massachusetts Audubon Society.

Nongame Advisory Committee

Full members are: Kathleen Anderson (Chair), Marilyn Flor, C. Barre Hellquist, Joseph S. Larson, Mark Mello, Stephen M. Meyer and Pamela Weatherbee.

Associate members are: Brian Cassie, Scott Jackson, Glen Motzkin, Blair Nikula, Wayne Petersen, Jonathan A. Shaw and Mark Pokras.

During FY01 the Committee held 10 scheduled meetings. August has been a traditional vacation month for the Committee and the December meeting was missed due to snow. Six of these meetings were held at the Westborough Field Headquarters and four were held at other locations. The July 2000 meeting was held in the Windsor Town Hall with a field trip to the Chalet Wildlife Management Area; the November meeting was in Holdsworth Hall on the University of Massachusetts, Amherst Campus; the May 2000 meeting was at Harvard Forest in Petersham; and the June 2001 meeting was at the Great Meadows National Wildlife Refuge in Sudbury. Business of the Nongame Advisory Committee included:

- Review of the 2000 Small Research Contract project results
- Review of the 2001 Small Research Contract proposals
- Review of the Program's proposed annual budget
- Discussion of the Teaming with Wildlife/CARA effort
- A vote to change the Committee's name to the Natural Heritage and Endangered Species Committee. Legislation to change this in the statute that created the Committee, was filed.
- Discussions of the proposed changes to the list of endangered, threatened, and special concern species
- Discussions of wildlife habitat protection guidelines for Wetland Resource Areas under the Massachusetts Wetland Protection Act

- Jonathan Shaw was appointed the Committee's representative on the Massachusetts Invasive Plant Working Group.

Nature Preserves Council

The Nature Preserves Council members are:

Chair, Lisa Vernegaard, Associate Director for Planning and Ecology at the Trustees of Reservations;

Secretary, Tom Rawinski, Director of Ecological Management at the Massachusetts Audubon Society;

Kathleen S. Anderson, member also serving on the Nongame Advisory Committee;

C. Barre Hellquist, member also serving on the Nongame Advisory Committee;

Mark Mello, member also serving on the Nongame Advisory Committee;

Pamela Weatherbee, member also serving on the Nongame Advisory Committee;

Paul Kress, representative from the general public.

Because of increased demands on her time as chair of the Nongame Advisory Committee, Kathleen Anderson requested that she not be reappointed to the Nature Preserves Council. Paul Kress also declined to be reappointed.

Agency Associate members are Andrea Lukens, Jack Lash and Douglas Poland (until his retirement) from D.E.M, and Jim French from M.D.C. In May, Ole Amundsen, E.O.E.A. Land Policy Program Coordinator, was designated to represent E.O.E.A.

Hyannis Ponds WMA was nominated by the Division to be a Nature Preserve. A consulting conservation ecologist was contracted to write the Protection Plan, funded through the BioDiversity Initiative, Ecological Restoration Program.

Planning for future preserves was one of the main topics of discussion in the Nature Preserve Council meetings. Many on the committee visited the Hockomock WMA, which was determined not to be a good site for a nature preserve, given the current issues and disturbances.

Natural Heritage & Endangered Species Program Staff

Thomas French, Ph.D., *Assistant Director*
Henry Woolsey, *Program Coordinator*
Jeanne Anderson, *Ecologist*
Collette Blais, *Projects Manager*
Bradford Blodget, *State Ornithologist*
Matt Burne, *Vernal Pool Ecologist*
Amy Burnham, *Finance & Projects Administrator*
Claire Corcoran, *Ecologist*
Melissa Dow-Cullina, *Botanist*
Hanni Dinkeloo, Esq., *Endangered Species Counsel*
Andy Finton, *BioMap Project Leader*
Suzie Fowle, *Herpetologist*
Marea Gabriel, *Habitat Protection Specialist*
Chris Gaughan, *GIS Assistant*
Sergio Harding, *Data Manager*
Lynn Harper, *Regional Habitat Protection Specialist*
Patricia Huckery, *Wetlands Environmental Reviewer*
Asuka Imai, *GIS Assistant*
Jennifer Loose, *Invertebrate Zoologist*
Amy Maher, *Environmental Review Assistant*
Erica McGrath, *Environmental Review Assistant*
Scott Melvin, Ph.D., *Rare Species Zoologist*
Carolyn Mostello, *Tern Restoration Project Leader*
Stephanie Neid, *Ecologist*
Michael Nelson, *Invertebrate Zoologist*
Jessica Patalano, *Projects Assistant*
Pamela Pollone, *Botanist*
Nancy Putnam, *Ecologist*
Tim Simmons, *Restoration Ecologist*
Joanne Singfield, *Ecologist*
Paul Somers, Ph.D., *State Botanist*
Patricia Swain, *Plant Community Ecologist*
David Szczebak, *GIS Manager*
Christine Vaccaro, *Environmental Review Assistant*

INFORMATION & EDUCATION

Ellie Horwitz
Chief, Information and Education

The Information and Education Section has the responsibility and challenge of keeping sportsmen and the general public apprised of regulations, laws and recreational opportunities related to wildlife. It provides news about wildlife and maintains a flow of information about wildlife related issues. In order to enhance public understanding of wildlife management and compliance with laws and regulations, the Section maintains an active program of educational outreach to develop a public which is aware of, and in tune with, wildlife issues. During the year we continued the many different information and education programs, revised administrative processes and products, and developed a new database for the Mass. Junior Conservation Camp.

New for 2001

New licenses were offered to the public in 2001. Public response was overwhelmingly favorable: sportsmen found that the licenses, tags and applications were more weather resistant and clerical staff found it easier to process the resultant information. Deer permits were also revised to streamline processing and customer convenience.

The state's Hunter Education Program became established within the Division of Fisheries and Wildlife! (See page 39.)

A new database was developed to facilitate on-site operations of the Massachusetts Junior Conservation Camp and the Section's financial record keeping system, initiated in FY 2000 was adjusted.

The agency published a children's guide to common wildlife species. "Critters of Massachusetts" was produced in partnership with Wildlife Forever and Adventure Publications and was printed in May 2001 to enhance public awareness of wildlife during the school-based phase of EOEA's Biodiversity days.

The Fisheries and Wildlife Board initiated a prestigious award for excellence in efforts which benefited wildlife in the Commonwealth. Details of the Francis W. Sargent award and its presentation were developed. This year in a ceremony at the Statehouse, the award was presented to Paul G. Kress of Carlisle.

Information and Outreach

Media Services

As part of the Division's program to educate the public about projects, activities and changes in regulations, Media Coordinator Bill Davis issued 20 editions of MassWildlife news releases and 8 media advisories.

Releases and advisories were distributed to 100 fax recipients, 230 e-mail recipients representing major media and 1,600 hard copy recipients including media outlets, town clerks, conservation commissions, sporting groups, Board members, State Representatives and Senators, EPOs, selected staff of MDC, DEM, ELE, DFWELE, EOEA, and all MassWildlife employees. News releases are also available on MassWildlife's website.

This initiative generated 3378 news clippings that were reviewed, sorted and distributed to appropriate staff, administrators and Board members. It also generated and many mentions on radio and TV including news program interviews and appearances on channels 3, 4, 5, 7, 22, Fox 25, 40, 56 and New England Cable News. A highlight of this was the production of three segments of "Wild Moments" a nationally televised children's wildlife program produced through WCVB Channel 5, the Boston affiliate of the Hearst-Argyle Corp. The segments featured Sue Langlois (beaver), Marion Larson (red fox) and Jim Cardoza (wild turkey). Digital video from MassWildlife's video library provided the core of each segment. Three segments were provided for the Gun Owners' Action cable TV series; Angler Education with Jim Lagacy, eastern coyote with Sue Langlois and bald eagles with Bill Davis.

Response to Public Inquiry

The volume of communications coming to the Division continues at a high level with inquiries arriving by telephone, mail, e-mail, and by way of the website. Telephone inquiries appear to be steady, mail and direct e-mail inquiries are down and inquiries through the website are increasing. Section staff fielded media inquiries on a wide variety of wildlife issues and species, participated in informational meetings for citizens' groups, schools and museums. They also and participated in inter-agency meetings. The media coordinator alone fielded 1167 telephone calls, other information education staff dealt with a similar volume of inquiry. As part of the effort to expedite telephone service, the coordinator maintained Field HQ phone and voicemail systems.

E-Mail & Voice Mail: E-mail to the agency mailbox has stabilized at about 12-15 emails/day. Answering agency voice mail was turned over to clerical staff as it became obvious that few people were leaving messages on the general phone number.

Website: Many new pages were added to the agency's website this year. In spring, weekly trout stocking reports were posted. A summer intern integrated pond

map write-ups with the pond maps suitable for webposting. The Natural Heritage & Endangered Species Program re-designed their website early in the fiscal year with many forms, images and other information available. Website use continues to grow. In July of 2000 there were over just over 25,800 "hits" on the site's front page, compared just over 18,510 in July of the previous year. From that point the number of hits escalated to a high of 37,600 hits in October, dropping down to 21,000 in January 2000, climbing to a spring-time high of 58,831 hits in March. April came in at 54,000 and in June the numbers dropped to 37,000. The high numbers probably reflect use by hunters and anglers during the height of their respective seasons.

Publications

The Division's most popular publication is Massachusetts Wildlife, a 40 page, full color quarterly which is sent to over 21,000 paying subscribers. The four issues produced this year, (Fall 2000 - Summer 2001), covered a wide variety fisheries, wildlife and outdoor-related subjects, including management, education, habitat enhancement, rare and endangered species, history, general nature interest and "how to" articles for the hunter, fisherman and nature observer. Articles of particular note included one on the natural history and identification of our carnivorous plants, another on bone identification, another on edible wild plants, and a feature article on the extraordinary success of the controversial gull management program on Monomoy National Wildlife Refuge. There were also feature articles on river otter, red spotted newt, moles and mute swan; and articles on management programs involving striped bass, hooded merganser, spotted turtles and public access.

Promotional strategies and a timetable for the coming year were established. Subscription envelopes were

distributed at shows, fairs and through the Registry of Motor Vehicles. This brought in 850 new subscribers during the past year! Renewal and pay-up rates remain excellent!

Other Publications

The state's Outdoor Recreation map, produced in partnership with the DEM and the Public Access Board, first published in 2000, proved such a success that it was updated and re-issued in FY 2001. Another partnership publication was produced this year. *Critters of Massachusetts* is a child's guide to some common mammals, birds and reptiles of the Bay State, produced by MassWildlife, Wildlife Forever, and Adventure Publications. This booklet became part of a national series of "Critters" books produced by Wildlife Forever and a highly sought item distributed to schools by Secretary Bob Durand as he toured the state during Biodiversity Days 2001.

The Section also produced a series of small publications. These included trout and pheasant stocking lists, materials publicizing the Outdoor Women's program and an updated and revised version of the list of towns with special restrictions that pertain to hunting.

This year the Section's efforts were enhanced by participation of some excellent interns. Courtney Duteau prepared materials for teachers using the Westboro Wildlife Management Area. Elizabeth McGovern prepared maps for use on the MassWildlife website. Finally in accord with EOE's initiative on mentoring of young people who might become interested in wildlife-related fields, two students from Concord-Carlisle H.S. shadowed staff members of MassWildlife.

Exhibits: MassWildlife provided display boards and exhibits at a number of events reaching a number of different audiences. These included Sportsmen's shows, education conferences, land dedications and land trust



The Massachusetts Hunter Education Program found a new home within MassWildlife.

festivals, fishing festivals, Earth Day, Employees conference, several fairs, Freetown State Forest, Mass. Topsfield Fair as well as the inter-agency display with Department of Food & Agriculture, Dept of Environmental Management at the Governor's Conference on Travel & Tourism.

Photography Projects

The staff photographer continues to provide an extensive display of supporting photography for each of the four issues, with new assignment images featured in articles about warm and cold water fish, newts and swans. A longer term seasonal film project on rare tiger beetles was started for inclusion in a 2002 article in the magazine.

B-roll video footage on beaver and red fox was edited and portions used in the network kids show "Wild Moments" in spring 2001. Turkey footage was edited and accepted for an upcoming broadcast. Moose video was provided and used by WBZ News Ch. 4, Boston..

Additional images were provided for the agency's website MassWildlife.org, with continued work on a long term plan for website galleries.

Many agency activities were documented, among them a Trapper Education workshop, Atlantic salmon fry stocking, B.O.W Hunter Education weekend and B.O.W Lenox weekend, Sportfishing Awards, Junior Duck Stamp competition, Conservation Camp presentations, and the Francis W. Sargent Conservation award ceremony.

As usual there was a constant flow of photo requests to be addressed from in-house, inter-agency, and media sources.

Education Programs

Through our education programs we continue to reach scouts, students in grades K-12, homeschoolers, pre-service teachers, college students and other adult audiences. This year we reached over 1900 students through programs presented directly to students by the Education Coordinator with other staff members reaching hundreds of other students as well. All of the Section staff provided presentations and programs to a variety of groups as needed and participated in a variety of planning processes, seminars and "career days" reaching thousands of adults and youngsters.

Formal or School – Based Programs

Project WILD

Thirty-three WILD Facilitators conducted 39 workshops reaching a total of 550 educators from across the state. There were also a number of workshops offered to EOE employees that highlighted activities from Project WILD, WET, and PLT. These workshops were a result of the E.O.E.A. Secretary's Education Initiative and the move to encourage state employees to participate in the MA SERVICE (State Employees Responding as Volunteers in Children's Education) Program.

The Facilitator Annual Gathering was held at Horizons For Youth, Sharon. Thirty-two facilitators enjoyed a day of camaraderie, updates, recognition, and fun.

A Project WILD/WET/PLT Facilitator Cross-Training took place in October at Grotonwood Conference Center, Groton MA with 29 enthusiastic educators.

Junior Duck Stamp Program (JDS)

This "conservation through the arts" program resulted in over 870 pieces of artwork being received, from across the Commonwealth, for judging. Entries were received from thirty-seven K-12 schools. Judging by a panel of wildlife artists and educators took place at Great Meadows National Wildlife Refuge and awards were presented in a ceremony held in the Great Hall of the Statehouse. The artwork selected as best of show (Canada Geese by Jeanne Cheng) represented MA at the National competition. A combination of the top 100 pieces of art became a traveling exhibit that reached twelve different venues throughout the state.

Merrimack River Watershed Education Project (MRWEP)

There was minimal participation from schools during this year. The student congress was cancelled as a result of low enrollment. Schedule conflicts, educational demands, and release time were obstacles that teachers found difficult to overcome.

Envirothon

Continued involvement with the MA Envirothon is through teacher and student workshops, serving on the education committee, preparing the wildlife exam, and attending monthly meetings. This year the Massachusetts Envirothon was held on the grounds of Mass Electric in Northboro.

Non-Formal Education Programs

Aquatic Resources Education

The Aquatic Resources Education Program consists of three separate programs. Angler Education Program is the main component. The other two programs are Aquatic Project Wild, and Watershed Education. The Angler Education Program is itself divided into several parts; fresh water fishing festivals, basic fresh-water fishing classes, fresh-water fishing clinics, and an in-house fishing tackle loaner program.

The Angler Education program is staffed by a coordinator who supervises approximately 100 active volunteer instructors in 10 workshop groups throughout the state. Recruitment for the instructional team takes place at the winter sportsmen's shows, and through positive publicity from word of mouth. The program was on display at three major sportsmen's shows — Worcester, Boston (Wilmington), Springfield, as well as several smaller venues. Instructors are trained through organized four-week instructor training classes, or by apprenticing within a given workshop group. A total of 4 new volunteer instructors were recruited.

Fishing Festivals: Fourteen events were set up specifically as fresh-water fishing festivals, including three events for anglers with special needs (two Disabled American Veteran events, and one Make-A-Wish event). These festivals ranged in size from 80 participants to 800. Basic fishing instruction is coupled with learning of useful skills including knot tying, casting, fish I.D., bait, equipment, etc.. Total participation for FY 01 is estimated at 4,065 people.

Four-Week Basic Fresh-Water Fishing Classes : There were nine of these events with approximately 150 participants. We have struggled with these classes over the past few years with decreasing attendance, cancellations, and a general lack of public interest. During FY '01 there were several cancellations, and in all of these cases there had been ample advertising, and the classes had been set up in densely populated areas. We also held several classes with borderline attendance, where the instructors could have easily cancelled the course but chose not to do so. Three groups (Newton, Nashoba Valley, and Shrewsbury) put on the bulk of these classes, and even in these areas (dense urban centers) there have been attendance problems. A new look at publicity for these programs is recommended.

Fresh-Water Fishing Clinics: These programs, although short in duration, seem to be the most popular of the fishing offerings. These clinics are generally two to three hours long, they involve a short lecture on the basics of angling followed by a healthy dose of fishing. Handouts are provided, and class participation is kept small enough to allow the instructors to work with participants one on one. There were 39 of these clinics during the segment in various parts of our state performed by the Coordinator, seasonal Assistant Coordinator, and various volunteers in different workshop groups. A little over 1,000 people (mostly children) participated during FY01.

Tackle Loaner Program: The Angler Education Program keeps and maintains fishing equipment onsite (Westboro) for loan to various groups throughout the state. We loaned equipment on 25 separate occasions during the segment totaling just over 800 rods and reels. Our equipment went to various groups like summer camps, MDC and DEM installations, and scout programs to name just a few. Along with the rods and reels, we also make available the necessary terminal tackle, and often various education materials.

There are also three off-site tackle loaner program locations (Stoneham and Shutesbury Public Libraries, and Spot Pond in Stoneham) that the Angler Education Program assisted in setting up in 1997, and 2000. These sites reported steady numbers throughout the segment.

Newsletter: The program newsletter Shortcasts was produced once during the segment (fall 2000). This along with e-mail, and telephone, are the major tools for communications between the Coordinator and program volunteers.

Skills Programs

Hunter Education

In the spring of FY 2000 Marion Larson was asked to head up the transition of the Hunter Education program from the Division of Law Enforcement to MassWildlife. Her assignment was to gain a complete understanding of the scope and breadth of the program, assess program and volunteer needs, address manageable short term needs and make recommendations for the future to the new Coordinator.

Staff

Staff members with the Program include an Administrative Assistant, Clerk, System Analyst and a Coordinator Position. Under the terms of an MOU signed by the various agencies, and the Fisheries & Wildlife Board, Environmental Police Sergeant Cameron Davis was assigned as the Law Enforcement liaison to Hunter Education. In April 2001 Susan Langlois was hired as Coordinator for the program.

Facility

The Program is housed at the High Ridge WMA on the Westminster/Gardner line. The building also houses the DLE Boat Safety Office. A gun vault houses equipment for the DLE armorers, confiscated firearms and firearms for the Hunter Education Program. There is a single classroom which provides both storage and classroom space for program activities and meetings as needed.

Program Content

The Hunter Education Program offers 5 courses:

- Basic Hunter Education,
- Bowhunter Education,
- Trapper Education,
- Muzzleloader Education and
- Map, Compass & Survival Education.

These courses are conducted by certified volunteer instructors and, with the exception of the Map, Compass and Survival Course, are offered across the state. Some Environmental Police Officers have also conducted courses in different areas of the state. The majority of courses are hosted at sportsmen's clubs, but there are others located at municipal facilities, schools and state parks. Survival courses are offered in Westminster at the Hunter Ed building and Pittsfield at the state forest where permanent field courses are installed. Three programs carry a legal mandate of one kind or another—Basic Hunter Safety courses are required for minors wishing to hunt on their own as well as for someone wishing to buy a license out of state or in state. Trapper Education courses are required of anyone who plans to become a fur harvester or problem animal control agent. Bowhunter Education courses have become mandatory in a number of other states most recently including Connecticut, New Hampshire and Maine. These courses are reciprocal with other states and Canadian provinces.

Course Summaries

- **Basic Hunter Safety:** 61 Courses were offered. Courses are 12-15 hours in length.

A total of 2,475 students attended, 2,252 passed, 12 failed and 213 did not complete the course. Students are asked to volunteer information on age, gender and ethnic background on their registration forms. 412 students ranged from ages 10 -14, 436 were ages 15-17. Thirty-four ethnic minorities and 307 women identified themselves. During the previous year 77 courses had been offered with 2,812 students participating and 2,160 passing.

- **Bowhunter Program:** 17 courses were conducted. Courses run 8-12 hours. A total of 621 students participated with 616 passing, 4 did not complete the course. 43 students were 10-14 years of age, 24 were 15 -17 years old. Nine ethnic minorities and 21 women were identified. During the previous year 10 courses had been offered with 324 students passing.

- **Trapper Education:** 3 courses were offered with a total of 45 participants. Courses are 12 hours in length. All passed. Three women were identified. No minorities or minors attended. Only one course was offered in the past fiscal year with a total of 23 students passing.

- **Muzzleloading Program:** Course length is 10-15 hours. 7 courses were conducted, with 55 students participating. 50 passed, 1 failure, 4 incomplete. Three 10 - 14 year olds and one 15-17 year old participated. Three women and minorities were identified.

- **Map, Compass & Survival:** Courses range from 8-10 hours in length. 7 courses were conducted, two in Pittsfield, five in Westminister. A total of 140 students participated, 135 passed, 1 failed and 4 withdrew. Three 10 -14 year olds and nine 15-17 year olds participated. Four minorities and 18 women were identified.

- **Waterfowl Identification:** One nine hour course was held with seven students participating, one of whom was a woman.

- **A total of 3,343 students participated in the Hunter Education Program in FY 2001.**

Hunter Education Instructors

There are 292 certified volunteer instructors in the program, 20 of whom are females. Volunteer instructors are certified through annual training workshops after a background check through the Division of Law Enforcement. Instructors are certified with different levels of responsibility. Some are team members, others are team leaders, termed Master Instructors, who are responsible for putting together a team of instructors and making arrangements for a course to be held. In the past, a number of Environmental Police Officers conducted entire courses, consisting of about 1/3 of the courses offered. Officers have been directed to offer instruction on laws in the various programs as they have in the past. During this fiscal year, a number of EPO's chose not to

conduct courses.

Accomplishments

Through a survey put together by the Commissioner's office in January of 2001, a volunteer managers meeting, and telephone conversations with instructors, needs of instructors were identified and efforts were made to address some of the short term needs. Three major needs emerged:

1. Teaching technique training for instructors
2. Teaching aids and materials
3. Improved communication between volunteers and Hunter Education staff

Instructor Recruitment & Training: A new application for potential instructors was created to provide information above and beyond that uncovered during a law enforcement background check. Thirty two new instructors joined the program during this year. Some of those individuals had been in the recruitment and background process for at least a year. For the first time in 3 years, annual instructor training workshops were conducted in Greenfield Community College, Wachusett Community College in Gardner and Bristol County Agricultural High School in Dighton. These workshops are mandatory for instructors who wish to maintain their program certification status. Two hundred seven volunteers attended these workshops. Content included: updating volunteers on the status of the Hunter Education Program, introducing the new State Coordinator, Federal Aid Information, Massachusetts Gun Law and a teaching techniques session focusing on ethics. Three instructors resigned during this reporting period.

Communications

Internal: A newsletter was revived after a four year hiatus. Three newsletters were published beginning in the fall. Program updates, program funding information from the Director, new regulations, teaching tips, and accident information were among some of the topics covered. A November meeting of the volunteer program advisors was held with the Director at Westboro to listen to their needs and to provide answers to questions relating to funding, legislation and the future direction of the program. An e-mail list of 130 volunteers was compiled in the spring and has been used to forward agency News Releases and program related announcements.

External Communication: The hunter education website was moved to the MassWildlife pages and for the first time included a listing of all courses offered throughout the state. The course listing on the website is now updated as dates for workshops are confirmed. Descriptions of each course offering were posted along with staff contact information and new links to associated websites.

Teaching Aids & Materials: The Program purchased slide projectors and an "Infocus" projector for Power Point presentations along with teaching aids and materials for each one of the course programs. Purchased

videos for the Basic and Bowhunter Courses, and materials suitable for handing out to students in courses.

Publicity & Outreach: The publicity database used to announce courses, was updated as new information or return mail dictated. New venues to send announcements were added including all staffed facilities of the Dept. of Environmental Management and those outdoor writers residing in the Commonwealth. Other venues for promoting the Hunter Education Program included an exhibit at the Topsfield Fair, Eastern Outdoor and Fishing Expo in Worcester and the Standish Sportsmen's Show in Bridgewater. Other display opportunities included: Phillipston Safety Day, Municipal Safety Days, and an International Bowhunter Education Foundation display at the Springfield Sportsmen's Show received materials about the program.

Becoming an Outdoors-Woman

Becoming an Outdoors-Woman continued to draw interest and provide positive outreach. During this year the program offered nine events serving 247 participants. Largest of these was the full "Becoming an Outdoorswoman" weekend held in June 2001 in Lenox (90). Other events included Fly-Fishing, a Winter Survival weekend, a Family Day, a hunter education weekend (3 day) and guided hunts for upland birds, turkey and deer. All three hunts and the fly-fishing session were filled to capacity and had a waiting list of participants.

Programs offered were:

- Full B.O.W. Weekend August 2000
- Hunter Education Weekend September 2000
- 1ST B.O.W. Deer Hunt December 2000
- Upland Bird Hunt January 2001
- Fly-fishing April 2001
- Turkey Hunt May 2001
- Family Day May 2001
- Full B.O.W. weekend June 2001

During the year volunteers created an electronic database for the program enabling MassWildlife to send program notices to individuals who had expressed an interest in receiving such information. Such notification will be faster and less costly than mail and it is our hope to expand the electronic notification system.

Other volunteers initiated a program newsletter – soliciting articles of interest to women who enjoy outdoor activities, editing and preparing layout. The newsletter was printed courtesy of H & R 1871 Inc. and sent to all program alumnae. Special thanks are due to Nannette Schwartz and Kathryn Barnicle for this service.

The list of participants in B.O.W. programs and individuals requesting such information was provided to the Mass. Dept. of Health as a source of individuals for focus groups of women interested in fishing and fish consumption.

Mass. Junior Conservation Camp

This year, as in the past, the Division conducted publicity and pre-camp administration for the Massachusetts Junior



The "Becoming an Outdoors-Woman" program held its first deer hunt in December 2001. The ten novice hunters took three deer.

Conservation Camp. This camp, which serves boys and girls ages 13 - 17, is sponsored by Mass. Junior Sportsmen's Conservation Camp Inc. of Northborough. This was the fifth year that the camp was held at Camp Cachelot just outside Myles Standish State Forest. One hundred twenty five campers were enrolled. Division staff offered instruction in fisheries and wildlife, provided an instructional tour of the Sandwich Fish Hatchery, presented a session on deer management and coordinated the camp's conservation information competition.

Other Education Initiatives

Great Falls Discovery Center

Planning and production of exhibits for this partnership center continued throughout the year.

Renovations on the building are complete and meeting room facilities are now available. A model of the full exhibit was completed and work has been initiated on the exhibits. Background murals are virtually complete. Efforts are underway to secure the rights to the former railroad right-of-way to be renovated as a bikeway.

Secretary's Advisory Group on Environmental Education (S.A.G.E.E.)

This group works in an advisory capacity to keep the Secretary of Environmental Affairs apprised of current trends and initiatives in education that could enhance environmental management. This group has been working toward the development of an Environmental Education Plan for the Commonwealth. That plan was submitted to EOE Secretary Bob Durand and Education Com-

missioner David Driscoll. In April 2001 that plan was adopted by both EOEA and the Dept. of Education. Once the plan was submitted, a committee of S.A.G.E.E. was established to help ensure implementation of the plan. Ellie serves as Chairman of the Masterplan Implementation team. Ellie also served as part of the review team for the statewide environmental education awards program now in its 7th year of recognizing excellence in environmentally conscious school programs.

Northeast Information & Education Technical Committee

The Model I & E Section document, in preparation for the past two years, was published. Officers of the Association presented it at a variety of national meetings. The group completed a five-year plan to enhance agency recognition and credibility with members of the public. As a first step in this process focus groups were held to identify levels of public recognition. Massachusetts fared well in these initial trials. As a second step the group is developing an opinion research template which will be available to all participating states and which will establish a baseline assessment of public perception of agency initiatives.

Further Outreach

Teaming With Wildlife: Email lists were the primary method to provide updated C.A.R.A. information to Coalition members and other interested citizens. The Conservation & Reinvestment Act was reintroduced in 2001 and with one exception, all Massachusetts Congressmen co-sponsored the bill.

Tourism Contacts: This spring, Ms. Larson attended the Mass. Office of Travel & Tourism (MOTT) conference in Hyannis where initial research showed the M.O.T.T.'s target audience was participating in outdoor activities, second to touring historical sites. During this year, staff from Dept. of Food & Agriculture, the Dept of Environmental Management and MassWildlife achieved a first M.O.T.T. Conference goal by displaying a joint agency display board promoting outdoor opportunities in Massachusetts with an emphasis on state lands and outdoors oriented programs. Abstracts are being distributed by Visitors' Centers at Rte 2 in Lancaster, Rte 495 in Chelmsford, the I-95 visitor center in Salisbury and the Visitor Center in Springfield. A new Riverfront

Visitor Center in Springfield is under construction and is due to open in Sept 2001.

State Soil and Water Commission Meetings: The Section Chief represents MassWildlife at the State Soil and Water Commission Meetings. This group was not very active this year as a result of budget constraints

Programs

Section staff members presented lectures, slide shows and presentations on wildlife and wildlife management to school groups, civic groups, sportsmen's clubs, senior centers and audiences at special events. They participated in "career" days, judged science fairs and provided technical advice to schools seeking to improve their grounds as wildlife study areas.

Production of Annual Materials Licenses and Abstracts

A timetable for production of Licenses, Abstracts and Stamps was developed in conjunction with MassWildlife's fiscal staff. Proceeding on this schedule all materials were prepared, printed, delivered and sent to vendors by early December.

This was the second year of the newly formatted licenses. These have been well received by sportsmen and have resolved certain difficulties that had been experienced with the traditional paper licenses.

Waterfowl Stamp

2001 is the 28th year of the Massachusetts Waterfowl Stamp! Artwork for the 2001 stamp was selected in a competition held at the Peabody/Essex Museum in Salem in September 2000. In that competition a panel of five judges selected Barry Julius's painting of a resting black duck by A. Elmer Crowell.

A reception was held at the museum to honor Barry Julius and to celebrate the successes of the waterfowl stamp program.

Archery and Primitive Firearms Stamps

The competition for the 2001 archery and primitive firearms stamps was held at the Division's Field Headquarters in Westboro. Judges selected Gregg Coppolo's painting of a silver coin with flintlock, caplock and arrows.

Information & Education Staff

Ellie Horwitz, *Chief*

Bill Byrne, *Senior Photographer*

Bill Davis, *Information Coordinator*

Jill Durand, *Circulation Manager, MASSACHUSETTS WILDLIFE Magazine*

Nancy Fulham, *Receptionist*

Jim Lagacy, *Aquatic Resources Education Coordinator*

Pam Landry, *Education Specialist*

Marion Larson, *Outreach Coordinator*

Peter Mirick, *Publications Coordinator*

DISTRICT REPORTS

Northeast District, Chuck Bell, *Manager*

Southeast District, Louis Hambly Jr., *Manager*

Central District, Chris Thurlow, *Manager*

Connecticut Valley District, Ralph Taylor, *Manager*

Western District, Tom Keefe, *Manager*

The five Wildlife Districts are the field presence of the Division of Fisheries and Wildlife, administering wildlife lands, conducting on-site management, and addressing wildlife issues pertinent to their region.

District staff conduct fisheries and wildlife surveys and gather data for research programs. They release pheasants on Wildlife Management Areas and in open covers and release trout, northern pike and tiger muskies into designated waters. They also operate check stations where sportsmen register deer, bear, turkeys and furbearers taken during hunting and trapping seasons. They serve as agency liaisons with conservation organizations, including sportsmen's clubs. They conduct educational programs within their region, and they respond to media inquiries. District personnel provide advice and technical assistance to persons and/or agencies dealing with problem wildlife situations. In this context, District staff deal with a large number of beaver complaints, deer damage complaints and other issues dealing with the impact of wildlife on human activities.

District personnel distribute licenses, abstracts, stamps and other materials related to the sale of hunting, fishing, and trapping licenses. They assist officers from the Division of Law Enforcement to assure public adherence to wildlife laws and regulations, and they assist the staff of the Division's Wildlife Lands Section in locating titles and landowners, in making arrangements for the Division's acquisition of lands for wildlife and in erecting gates, signs and other efforts related to the protection and management of the agency's lands.

During the past year, staff from all of the Districts participated in numerous research programs including the annual mid-winter eagle survey, waterfowl inventory and banding, census of mourning doves, woodcock, ruffed grouse and quail. They also monitored water quality of lakes and streams prior to releasing fish into them. District staff reviewed the Environmental Monitor for development projects that would affect fisheries, wildlife populations or key fish/wildlife habitat including wetland areas. They also provided technical advice on the control of environmental problems — particularly in the handling of nuisance animal situations. District managers served as the Division's public relations/education point persons, spending many hours with civic and sportsmen's groups and responding to inquiries from interested citizens.

All Districts offer programs that introduce visitors to MassWildlife and its activities. All participate in the release of specially tagged fish for MassWildlife's Tags 'n' Trout program. District staff monitor and manage the Wildlife Management Areas (WMAs) in their region.

This involves cutting brush, mowing, trimming trails, designing forest cutting operations, planting shrubs and maintaining roads and parking areas. It also involves maintenance of nesting boxes for wood ducks, bluebirds and purple martins, and establishment of cooperative agreements with farmers raising crops on Division lands. District staff members also maintain MassWildlife's buildings and vehicles.

In addition to the activities that are common to all of the Districts, there are certain projects that require the participation of staff from only certain Districts.

Northeast Wildlife District

Staff of the Northeast District monitored activities at nine Wildlife Management Areas, five sanctuaries and nine boat launching sites. All of these areas receive particularly heavy public use. The District also issued three camping permits and 400+ target range permits during this period. Seventeen field trials were held by five organizations on WMAs in the Northeast.

Wildlife populations including moose, bear, deer and beaver continue to grow in the Northeast and so do encounters between people and wildlife. Housing and urban development combined with steadily growing beaver population resulted in numerous problem beaver complaints logged at the District. This required significant effort in the performance of data collection, site investigations, providing technical advice, support services, and issuance of permits. However, anecdotal evidence suggests that there has been an overall reduction in the time spent responding to beaver complaints due to recent changes in state regulations.

The presence of coyotes, particularly in our suburban communities, continues to demand a significant number of staff-days in the form of site investigations, response to public inquiries, and formal public presentations. Local agencies and individuals have been provided technical assistance on all matters relating to coyote behavior, predation and concerns regarding public health and safety. Particular focus has been placed on measures to minimize potential adverse coyote-human interactions.



District biologists conducted a statewide census of mourning doves.

The District manager and staff biologists represented MassWildlife at some 58 meetings including sessions of County Leagues of Sportsmen's Clubs, Watershed Councils, Conservation Commissions, Town Meetings, and Land Trusts. District staff also designed and manned an exhibit at the Topsfield Fair and assisted at the Fishing and Outdoor Expositions in Worcester and Wilmington.

District staff continued their active participation in the state Youth Upland Game Hunt and the Youth Upland Waterfowl Hunt. These events are co-sponsored with the Essex County League of Sportsmen and the U.S. Fish and Wildlife Service (waterfowl hunt only). Northeast District personnel also provided support services and monitored a special waterfowl hunt at the Delaney WMA in Boxborough, Harvard and Stow.

In addition to activities performed by all Districts, Northeast District staff conducted fish surveys of 26 streams, rivers and ponds. They also assisted in the capture of Atlantic salmon and monitoring of anadromous fish passage at the Lawrence fishway on the Merrimac River.

Staff biologists conducted research and supported other DFW staff in the banding of Canada Geese; captured radio-collared and monitored white tailed deer as part of a statewide mortality study; fabricated signage; and identified and marked boundaries on both existing and new land holdings. NED staff also participated in the release of two juvenile bald eagles on the Merrimac River.

Southeast Wildlife District Survey And Inventory

During the summer of 2000, pond surveys were completed on ten ponds in the Buzzards Bay and Taunton River watersheds. Stream surveys were completed on the

Acushnet and Mattapoisset Rivers. The annual trout survey on the Quashnet River was conducted with the help of Trout Unlimited. Temperature monitors at three locations in the Quashnet River were checked on a regular basis. District personnel assisted Westboro Field Headquarters staff in surveys of Parker Mills Pond in Wareham and Jacobs Pond in Norwell. In June 2001, fish surveys on five ponds and three streams in the South Coastal Watershed were completed. Data from pond and stream surveys were analyzed, summarized and survey reports were written throughout the year.

Technical Assistance

Local and state agencies, private consulting firms and individuals were provided with an increasing amount of technical assistance. A considerable amount of time was spent in providing technical assistance to the Air Force Center for Environmental Excellence and Jacobs Engineering in relation to the Massachusetts Military Reservation (MMR) cleanup. The Fuel Spill One/bog separation project to control ethylene dibromide contamination in the Quashnet River was a major project that required a very large expenditure of time to protect fisheries resources. Fisheries personnel relocated wild brook trout from a bog ditch that was being closed in the town owned Quashnet River cranberry bogs as part of this project. A plan to apply alum to control the impacts of phosphorous on Ashumet Pond from the former Otis Air Force base sewage treatment plant was another base related project that required a considerable amount of technical assistance this fiscal year. Other technical assistance was given to conservation groups working to protect the A.D. Makepeace properties, and to the Cape Cod Commission on Cape Cod Ponds. The southeast district fisheries manager served as MassWildlife's rep-

representative on the new Southeastern Massachusetts BioReserve Planning and Working Groups.

Environmental Review

During the year, the Environmental Monitor was reviewed for projects having potential impact on fisheries resources. Environmental Notification Forms were requested to determine possible impacts, and comments were made if fisheries concerns were noted. The fisheries manager was actively involved in monitoring the Massachusetts Military Reservation's cleanup plans as a member of the Joint Process Action Team (JPAT).

Fish Kill Investigation

Nine fish kill reports were received between July and December 2000, primarily small natural kills. A fish kill in the Childs River was reported by the Falmouth Conservation Commission and was thought to be due to cranberry bog pesticides. Analysis of fish and water samples collected by the Falmouth Conservation Commission and pesticide bureau were found to contain pesticide residues. Between January and June of 2001, ten fish kill reports were received. Fish kills were investigated in Wenham Pond and Parker Mills Pond that were deemed probably to have been caused by cranberry bog pesticides and the State Pesticide Bureau was contacted.

Other Activities

The Southeast District continued to assist the Sandwich Fish Hatchery in a variety of ways. Assistance was provided to the hatchery in computer operations and developing display material and in routine hatchery operations such as trout spawning and unloading of food.

On June 25, 2001 ninety-plus head-started red-bellied turtles were released in the Assawompsett Pond complex.

Managed deer hunts totaling 1,618 man-days were conducted at the Otis/Edwards Military Reservation for archery, shotgun and primitive firearms seasons. Eighty-nine deer were taken.

Complaints of deer damage to crops and ornamentals increased, as did complaints about coyote depredation on pets and farm animals. After a rabid fox bit a person in Plymouth, the District had many calls from people who had seen foxes near their homes.

Central Wildlife District

Here, as in all other Districts, staff managed check stations for deer, turkey, and bear. They conducted census routes for ruffed grouse, beaver and mourning doves. They stocked trout and pheasants, participated in the annual bald eagle survey and like staff of other Districts, they built kestrel and songbird nest boxes. Like other Districts they also conducted a variety of management projects on the WMAs in the District. This included such activities as brush cutting, sign making, building repairs and road maintenance.

Thirty-two streams and six ponds were surveyed. Age and growth analysis, food habits and spawning success studies were carried out on landlocked salmon and lake trout at Wachusett Reservoir. District personnel assisted in lake trout and salmon studies at Quabbin Reservoir and surveys of the Millers, Blackstone and Assabet Watersheds.

Numerous nuisance animal complaints and incidents of wildlife predation on domestic stock were investigated and acted upon. Beaver complaints were investigated and actions taken.

The District Manager attended meetings of the Worcester County League of Sportsman Clubs. The District Manager and District Biologists attended meetings with various state and local agencies on subjects such as highway construction, wetland permits, and other wildlife and environmental situations. Managers and Biologists attended various staff, planning, professional, training and informational meetings. Technical assistance was provided to state and local departments on issues such as road construction, dam removal, housing development, water pollution, lake associations and open space plans.

Public Access

Six boat ramps were inspected and litter removed. Ramp repairs were made at South Pond, Chauncy Pond, Ware River, Eddy Pond and Webster Lake.

District Personnel also assisted and advised Riverways programs on the Blackstone, Millers, Nashua, Chicopee, Quaboag, Ware, Assabet, Sudbury and Charles Rivers.

Connecticut Valley Wildlife District

In addition to the activities performed by all Districts including maintenance of Wildlife Management Areas (which involved brush cutting, trail maintenance, establishing and overseeing cooperative farming agreements) Connecticut Valley Wildlife District personnel conducted the annual controlled waterfowl hunt at the Ludlow WMA. This included maintenance and administrative activities.

District staff participated in the surveys of ruffed grouse, woodcock, a mallard/black duck survey, and the wood duck productivity study. Fisheries staff conducted stream and pond surveys, netted lake trout at Quabbin Reservoir in conjunction with the Quabbin Anglers Association, and conducted a Quabbin creel survey. In addition to stocking activities conducted by all Districts, the Valley District stocked the Quabbin Reservoir with salmon smolts, originating from the Roger Reed Hatchery.

Staff of this District have been involved in the Springfield Sportsman's Show, the Franklin County Fair, and Earth Day at the Springfield Science Museum, and also provided a special stocking day for youngsters at Quabbin Reservoir. These events are attended by thousands of people and provide the agency with highly positive

public relations. In addition to these events staff have been active with school groups and local area colleges and universities providing presentations relevant to MassWildlife's mission.

The District Manager attended regular meetings of the Franklin, Hampshire and Hampden County Leagues, as well as many individual club meetings, select board meetings, and conservation commission meetings. The District Fisheries Biologist has attended many meetings for the Deerfield, Westfield and Chicopee watersheds.

This District hosts many activities and meetings at its meeting/classroom facility. Groups that have taken advantage of this facility include the Fish and Wildlife Board, deer aging workshops, local school groups, hunter safety courses and others.

District Staff have been involved in a number of special projects for the Natural Heritage Section. These include rappelling for raven banding at a record number of sites, assisting with the reconstruction of an eagle nest at Barton's Cove on the Connecticut River and providing technical support for the banding of peregrine falcons in Springfield, MA.

The Valley District has continued the majority of field responsibilities for the black bear project, coordinating and conducting field trips during the winter to replace aging radio collars which allow the biologists to follow and study individual bears while in their den and to monitor bear travels.

This District conducts a large part of MassWildlife's eagle project monitoring, climbing nest trees and banding eagles throughout the state. This has included working cooperatively with staff from the Conte Refuge to position the Eagle Cam (camera) which provides internet access to the eagle nest at the Barton's Cove site.

The Valley District continues to play a key role in loon observations at the Quabbin Reservoir. District staff constructed and deployed four new loon rafts this year, and provided another to be deployed by MDC staff at Wachusett Reservoir.



Increasing public concern about coyotes prompted MassWildlife to initiate a campaign to educate communities about these animals and their habits.

District staff also maintained and repaired various agency vehicles including the Fisheries Section's electro-shocking boat, the lake trout survey boat and the Natural Heritage Section's whale recovery boat.

Western Wildlife District

Western Wildlife District personnel were involved with all of the activities common to the Districts including stocking of trout, muskies, broodstock salmon and pheasants. They manned check stations for turkey, deer, black bear and other furbearing species. They built wood duck, bluebird and kestrel boxes. They monitored the District on eagle, woodcock, mourning dove, ruffed grouse and turkey gobbling census routes and they conducted breeding bird surveys on the Hy Fox and the Fox Den WMAs. They also maintained signage, parking areas and conducted vegetation control on the District's WMAs.

They distributed licenses, abstracts, stamps and a variety of regulations and permits. They conducted stream surveys, creel census projects, responded to fish kills and provided information and technical guidance to town conservation commissions, and county, state and federal agencies involved with the permitting of various construction or development proposals. Technical assistance on fishery and wildlife issues was provided to lake associations, a variety of advisory groups and to members of the general public.

Routine activities also included repairs to buildings and vehicles, snow removal, maintenance and repairs to boats, trailers and two tractors, and the repainting of the District HQ building.

Nuisance animal and rabies complaints were handled on an advisory basis whenever possible. Other animal complaints required on-site confirmation and direct assistance from District personnel. In addition to responding to routine animal complaints, the W.W.D. handled 73 beaver complaints, (a major reduction in numbers from previous years, due to the revision of Chap. 80A which shifted 1st response authority to local Boards of Health), moose sightings, (teeth or jaws were extracted from 3 road killed moose for aging purposes), a fallow deer complaint, coyote depredations and numerous bear and fox complaints.

Staff also responded to a report of a young, distressed cow moose in Pittsfield. They immobilized the animal and moved it to the town of Washington.

District personnel set up two electric fences to protect crops from black bears on a temporary/demonstration basis.

Staff participated in manning the display booth and selling licenses at the Springfield Sportsmen's Show. They also participated in the Becoming An Outdoors Woman Program held in Lenox, MA, conducting a Wildlife Track Identification course.

The Aquatic Biologist presented data and District activities at Watershed Symposia and educational work-

shops. He also participated on a panel for the state's Lake Preservation Association

As a member of the Kampoosa Bog Stewardship Committee, the District Manager continued to participate in the implementation of the Kampoosa Bog Drainage Basin A.C.E.C. Management Plan.

The District Manager spent many hours attending meetings with DEP, EPA, and the Citizens' Coordinating Council relative to PCB contamination of fish and restoration of wildlife habitats along the upper Housatonic River. In addition, many hours were spent by the District Manager and the Aquatic Biologist reviewing PCB/Housatonic River reports regarding remediation and restoration of the river and its floodplain.

The District Wildlife Biologist conducted three bird surveys on two WMAs as part of the Biodiversity Initiative. He also conducted an endangered plant survey on a WMA, taught a birding course to U.S.F.&W. Service employees, presented a slide show to the Plainfield Grange, attended a dissection lab in Belchertown, assisted Westboro in airboating ducks, and initiated removal of water chestnut in a Hancock beaver pond.

District personnel participated in a deer trapping and collaring/population study in Deer Management Zone #2. They also participated in a beaver population study in Berkshire County.

District Personnel

Northeast District

Chuck Bell, *District Supervisor*
Erik Amati, *District Wildlife Manager*
Peter Jackson, *Fisheries Manager*
Frank O'Meara, *Martin Burns W.M.A. Supervisor*
Richard Cannata, *Laborer*
Bob Desrosiers, *Wildlife Technician*
Brian Guerin, *Laborer*
Sue Ostertag, *Secretary*
Dennis McNamara, *Land Agent*

Southeast District

Louis S. Hambly Jr., *District Supervisor*
Richard Turner, *Wildlife Manager*
Steve Hurley, *Fisheries Manager*
Jeffrey Breton, *Laborer*
Daniel Fortier, *Laborer*
Ed Kraus, *Conservation Technician*
Camie Marsh, *Secretary*
Salvatore Paterno, *Laborer*
Joan Pierce, *Land Agent*

Central District

Chris Thurlow, *District Supervisor*
Dave Fuller, *Wildlife Manager*
Lee McLaughlin, *Fisheries Manager*
Bob Chapin, *Laborer*
Paul Le Boeuf, *Laborer*
Priscilla MacAdams, *Secretary*
Paul Orrizzi, *Fisheries and Wildlife Technician*
Phil Truesdell, *Land Agent*

Connecticut Valley District

Ralph Taylor, *District Supervisor*
Michael Ciborowski, *Wildlife Manager*
David Basler, *Fisheries Manager*
Barbara Bourque, *Secretary*
Adam Davies, *Laborer*
Gary Galas, *Fisheries and Wildlife Technician*
Rick Gamelin, *Laborer*
James Wright, *Skilled Laborer*
Will Steinmetz, *Land Agent*

Western District

Tom Keefe, *District Supervisor*
Anthony Gola, *Wildlife Manager*
Andrew Madden, *Fisheries Manager*
Dale Beals, *Laborer*
Elna Castonguay, *Secretary*
Joseph Kirvin, *Wildlife Technician*
David St. James, *Skilled Laborer*
Jerry Shampang, *Skilled Laborer*
Peter Milanesi, *Land Agent*

WILDLIFE LANDS

William J. Minior
Chief of Wildlife Lands

New for 2001

The Realty Section completed over seventy acquisitions in FY 01. The Western District accounted for nearly seven thousand of the twelve thousand plus acres protected this year. The Connecticut Valley and Central Districts had an outstanding year as well with over two thousand acres protected in each district. Five hundred and fifteen acres were protected in the Southeast and the Northeast did a respectable four hundred and twenty acres. Slightly over eleven million dollars was expended directly on land in FY 01. In all the land protection effort resulted in a very productive year for all districts.

The extensive amount of acreage protected was in large a direct result of the Governor's and Secretary's desire to attain protected acreage goals. Additional funds were made available through the Secretary's office for agency as well as specific project areas. The combination of additional funding and a concerned effort to protect acreage through Conservation Restrictions (CR) resulted in the protection of many parcels that may not have been protected otherwise.

A priority project of the Secretary's office was the North Quabbin (NQ) area and acquisition efforts there resulted in the DFW protection of approximately two thousand acres in the Connecticut Valley and Central Districts. Acquisitions in the NQ area occurred in five distinct areas, Tully Mountain, Millers River, Lawrence Brook, Secret Lake and the Orange WMAs. Most NQ parcels are protected through CR's which allow compatible public use, including hunting.

Other CRs of note include the Dalton Fire District's conveyance of a CR to the DFW on approximately 2,568 acres in the Towns of Hinsdale, Peru and Windsor, and the Bill Hull conveyance of CRs on several parcels of land in the western part of the state with a total of approximately 2,780 acres. The Fairview Sportsmen's Fish & Game Association, Inc. donated a CR on 190 acres in Granby because DFW purchased an abutting tract that was slated for development. The combined result was an approximate 350 acre addition to DFW's Facing Rock WMA.

Non-profit organizations assisted in our land protection efforts directly through pre-acquisition and indirectly through negotiations and due diligence. TNC pre-acquired four separate transactions while efforts by various other organizations and trusts including MAS, TTOR, NEFF, Franklin Land Trust, Hardwick Area Conservation Trust and Orenda Wildlife Land Trust assisted as well.

More acreage was protected in FY 01 than in any previous year and prospects for the immediate future also look promising. The Habitat Protection Coordinator/Bond Fund Administrator position vacated by Rob Warren was filled by Robin Childs, completing our acquisition team and providing a strong base for further acquisitions in FY 2002!

Fiscal Year 2001

Western District

Expended	\$4,008,775.00
Acreage	6,923.00
Cost/acre	\$579.05

Valley District

Expended	\$2,320,110.00
Acreage	2,114.60
Cost/acre	\$1,097.19

Central District

Expended	\$2,612,399.00
Acreage	2,132.00
Cost/acre	\$1,225.33

Northeast District

Expended	\$1,588,300.00
Acreage	420.90
Cost/acre	\$3,773.58

Southeast District

Expended	\$773,100.00
Acreage	515.00
Cost/acre	\$1,501.17

TOTAL EXPENDED: \$11,302,684.00

TOTAL ACREAGE ACQUIRED: 12,105.50

AVERAGE COST PER ACRE: \$933.68

The above figures include Departmental acquisitions. It should be noted that the acreage figures and costs of those properties acquired with FY 01 funds and all property RECORDED in FY 01 between 7/7/00 and 8/2/01 are included herein. Ancillary costs are not included.

Western District

Twenty-one acquisitions were completed in the Western District in FY 01 protecting a total of 6,923 acres. This included 10 fee and 11 CR acquisitions on seventeen different areas. Direct land protection costs were approximately \$579.00 per acre. Two new WMAs were added along with Conservation Restrictions (CRs) on several new areas. The two new areas are the Lily Pond WMA in Goshen and the 700 plus acre Agawam Lake WMA

in Stockbridge and Great Barrington. This is an outstanding resource and one that has been of interest to this agency for more than three decades.

The largest contiguous CR acquisition is the Dalton Fire District property consisting of 2,568 acres in the towns of Hinsdale, Peru and Windsor. This large tract connects with other protected parcels including the Peru WMA, forming a huge assemblage of protected open space in what is referred to as the Northern Berkshire Plateau.

Several blocks of extensive acreage were protected through the purchase of a CR from Bill Hull who retained the fee for private forestry use. DFW held CRs prohibit development, allow for compatible public access and provide for DFW Forestry and Heritage input.

Generous gifts of property included TNC's 172 acre addition to the Farmington River WMA in Otis, their 9.1 acre addition to the Three Mile Pond WMA in Sheffield and a private donation of 7.9 acres to our Fox Den WMA in Middlefield.

Substantial additions were made to DFW's Farmington River WMA, the Fairfield Brook Natural Heritage Area and the Three Mile Pond WMA. Major CR's were acquired in Ashfield, Blanford, Chesterfield, Goshen, Huntington, New Marlborough, Russell, Sandisfield and Tyringham.

Connecticut Valley District

The Connecticut Valley District completed about twenty-five acquisitions protecting approximately 2,115 acres of land. This is by far the greatest number of acquisitions in a single year in the Valley and this may be attributed to major efforts in Satan's Kingdom, Whately Swamp, Mount Toby, and the North Quabbin area. The North Quabbin project primarily consists of CRs in the Tully Mountain area of Orange as well as various other environmentally significant lots in the Town of Orange. This is a priority project of the Secretary's office and also includes a number of tracts in the Central District as well.

The largest 01 fee acquisition in the Valley was the multi-parcel Scott property in the Whately Great Swamp

consisting of approximately 213 acres. This is the keystone acquisition of MassWildlife's Whately Great Swamp protection effort. Several other parcels were acquired here as well.

The Fairview Sportsmen's Fish & Game Association, Inc. donated a CR including public access on approximately 190 acres in the Town of Granby in appreciation for DFW's participation in protecting an abutting tract from development. This assemblage added considerable acreage to our Facing Rock WMA that now exceeds 1,500 acres.

It was a very productive year for land protection in the Connecticut Valley, increasing DFW's total protected acreage in the Valley to over 16,320 acres.

Central District

Twenty-three acquisitions were completed in the Central District for a total of 2,132 acres protected. This represented acquisitions in fourteen different areas including four in the North Quabbin area. These four areas that combined for thirteen acquisitions include Tully Mountain, Millers River, Lawrence Brook and Secret Lake. Conservation Restrictions/Conservation Easements including public access, were the primary means of protection on the North Quabbin areas.

Two relatively large CRs were acquired in addition to the North Quabbin CRs. The Bond & MacConnell CR added 234 acres to our Savage Hill WMA in Princeton while the Herbert Wood CR added 119 acres to our Quissit WMA in Mendon. The Herbert Wood CR was a combined protective effort involving the Town of Mendon which acquired the fee interest in the property and the Metacomet Land Trust which assisted in putting this deal together.

The Mine Brook W.M.A. was established with the fee acquisition of approximately 708 acres in the Towns of Douglas and Webster. This large tract abuts the Douglas State Forest that in turn abuts RI's Buck Hill Wildlife Area, creating a contiguous block of protected open space in excess of 8,000 acres.



Rolling hills in Erving, MA.

Northeast District

Five acquisitions in the Northeast District including a major new area made FY 01 a most beneficial land protection year. Two fee acquisitions in the Squannacook River WMA increased this valuable and popular resource to over 1,045 acres. Two gifts also added modest acreage to our William Forward and Crane Pond WMAs.

The acquisition of over 310 acres from the New England Power Company created our new Salisbury Salt Marsh WMA. This area had been acquired by the company some years ago in anticipation of another power plant. Although a considerable amount of this tract is salt marsh, a large abutting upland component is included as well. It is a resource rich area with extensive frontage on the Merrimack River, large amounts of valuable salt marsh, and a large assemblage of wetland and upland wildlife species. Considerable abutting acreage will allow for additional protective efforts in the future.

A combination of dense human population, fragmented landscape and high costs generally make land acquisition in the Northeast district a difficult task. An increased effort to identify additional focus areas should assist in future acquisition/protection in this densely populated region.

Southeast District

Six acquisitions in the Southeast District will help to provide resource protection to an additional 515 acres. Small additions were made to our Frances Crane and Haskell Swamp WMAs in an effort to eliminate inholdings and round out boundary lines.

Third party assistance was utilized in three of the Southeast's protection efforts. The Orenda Wildlife Land Trust pre-acquired the former Dawson property at the intersection of the Quashnet River and Route 151 in Mashpee and conveyed approximately 14 acres to DFW ending a thirty plus year effort to protect this acreage. The Massachusetts Audubon Society conveyed the resource rich Triangle Pond property in Sandwich at a considerable bargain sale, insuring compatible recreational opportunity and resource protection in perpetuity. The Trustees of Reservation (TTOR) assisted in the acquisition of the 400 acre Red Brook WMA in the Town of Wareham. This is the former Lyman property and it essentially contains the entire Red Brook watershed. TTOR acquired the portion south of Route 25 and will maintain a presence on the property. The Red Brook property abuts extensive municipal acreage in the Town of Plymouth that is a future target for habitat protection.

Land Agents

Peter Milanese, *Western District*
 Bill Steinmetz, *Connecticut Valley District*
 Phil Truesdell, *Central District*
 Dennis McNamara, *Northeast District*
 Joan Pierce, *Southeast District*

Western District

Wildlife Management Areas: 30	Acres	Tract #
Agawam Lake 701.8 254		
Becket	234.0	60
Chalet	5,559.1	86
Cumington	194.0	240
Eugene Moran	1,462.4	91
Farmington River	688.0	211
Fisk Meadows	580.2	88
Fox Den	3,626.7	100
Green River	489.2	125
Hancock	204.0	123
Hinsdale Flats	1,478.25	89
Hiram H. Fox (formerly Canada Hill)	2,951.0	48
Hop Brook	424.8	112
Housatonic Valley	817.9	67
John J. Kelly	267.0	85
Jug End*	1,233.8	191
Knightville	721.0	244
Lilly Pond	45.0	255
Maple Hill	345.1	148
Mica Mill Brook	812.0	243
Mount Plantain	672.4	241
Mount Tekoa	1,079.0	231
Otis	83.5	124
Peru (Inc. Tracy Pd.)	4,648.2	30 & 113
Powell Brook	224.0	115
Savoy	1,282.8	64
Stafford Hill	1,591.6	56
Taconic Mountain	157.3	232
Three Mile Pond	1,095.5	181
Walnut Hill	<u>812.0</u>	190
	34,436.5 acres	

*Jointly owned and managed with DEM

Wildlife Conservation Easements: 9

Sandisfield	692	245-1,2&3
New Marlborough	239	246-1
Ashfield	101	247-1
Chesterfield	491	248-1&2
Blanford	986	249-1,2&3
Huntington	78	250-1
Goshen	194	251-1
Tyringham	320	252-1
Dalton Fire District	<u>2,568</u>	253-1
	5,669	

River Access Areas: 4

Hoosic River	5.9	213
Housatonic River	27.5	103
Konkopot River	8.8	114
Westfield River (W)	<u>373.0</u>	94
	415.2	

Wildlife Sanctuaries: 2

E. Howe Forbush	268.0	16
Grace A. Robson	<u>69.5</u>	24
	337.5 acres	

Wildlife District: 1

District Headquarters	2.1	13
-----------------------	-----	----

Natural Heritage Areas: 7

Bullock Ledge	15.5	212
Dolomite Ledges	150.0	227

Fairfield Brook	203.3	226
Jug End Fen	38.8	147
Kampoosa Fen	72.0	173
Lanesboro	88.6	233
Nordeen Marsh	<u>22.9</u>	102
	591.1	

Forest: 1

Windsor	<u>110.0</u>	116
---------	--------------	-----

TOTAL WESTERN DISTRICT 41,561.4 acres

Valley District

Wildlife Management Areas: 25	Acres	Tract #
Catamount	341.0	119
Coy Hill(V)	201.6	221
East Mountain	241.5	202
Facing Rock	1,522.1	179
Herman Covey***	1,475.14	49
Lake Warner	94.8	180
Leadmine(V)	344.0	170
Leyden	343.0	200
Millers River(V)	65.84	A62
Montague	1,425.6	118
Montague Plains	1,490.0	234
Mount Toby	255.5	222
Orange	280.0	229
Palmer	902.3	178
Pauchaug Brook*	161.3	74
Poland Brook	618.73	70
Satan's Kingdom**	1,867.9	107
Tully Mountain	611.5	225
Wales	207.15	172
Warwick	172.0	126
Wendell	575.2	144
Westfield	227.0	174
Whately	275.2	182
Whately Great Swamp	297.5	235
Williamsburg	<u>88.0</u>	127
	14,083.8 acres	

*WMA and Connecticut River Access

**Acreage includes 402.5 acres of CR

***Combination-Hatchery(McLaughlin), WMA and District Hdqtrs.

Wildlife Conservation Easements: 3

North Quabbin CRs:		
Tully Mountain	166.7	
Orange	741.2	
New Salem	<u>59.0</u>	
	966.9	

Islands (Connecticut River): 2

Shepherd's Island	15.0	80
Sunderland Islands(2)	<u>9.0</u>	189
	24.0	

Fish Hatcheries: 4

Bitzer	150.6	7
McLaughlin(inc.in Herman Covey WMA)		
Reed	301.0	8
Sunderland	<u>47.7</u>	9
	499.3	

Game Farm: 1

Wilbraham*	137.2	4
------------	-------	---

*Turned over to Town in 99. CR retained on 137.2 acres.

River Access: 9

Connecticut River	70.8	117
Deerfield River	20.5	201
Green River(V)	29.5	185
Mill River	23.0	239
Sawmill River	51.0	176
Sibley Brook	13.39	152
Tully Brook	77.0	177
Ware River(V)	14.0	A63
Westfield River(V)	<u>76.8</u>	111
	376.0	

Pond Access: 3

Little Alum Pond	0.5	128
Lake Lorraine (PAB)	0.26	129
Lake Rohunta	<u>2.52</u>	209
	3.28	

Natural Heritage Areas: 4

Rainbow Beach	30.9	142
Mt. Toby Highlands NHA	100.0	159
Mt. Tom	13.6	238
Darwin Scott Memorial	27.3	157
Honey Pot NHA	<u>62.45</u>	175
	234.25	

TOTAL VALLEY DISTRICT 16,324.7 acres

Central District

Wildlife Management Areas: 35	Acres	Tract #
Bennett	281.2	A77
Birch Hill	3,356.2	50
Bolton Flats	985.9	90
Breakneck Brook	1,409.0	158
Coy Hill***	243.7	221
E. Kent Swift	200.5	84
Fish Brook	142.5	130
Four Chimneys	200.0	77
High Ridge*	2,049.0	98
Lackey Pond	150.54	165
Lawrence Brook	357.0	108
Leadmine(C)	296.0	170
Martha B. Deering	181.6	237
McKinstry Brook	226.3	184
Merrill Pond (System)	729.0	10
Millers River(C)**	2,621.9	62
Mine Brook	708.0	
Moose Brook	495.3	132
Moose Hill	567.1	59
Muddy Brook	906.0	167
Oakham	670.6	153
Palmer***	208.0	178
Phillipston	3,411.3	31
Popple Camp	1,160.98	A31
Poutwater Pond (formerly North Street)	378.0	133
Prince River	749.0	113
Quaboag River	1,673.6	55
Quacumquasit	179.9	131
Quisset	507.1	196
Raccoon Hill	416.0	151
Richardson	467.2	106
Savage Hill	1,109.7	150
Thayer Pond	131.0	171
Ware River(C)	291.4	63
Westboro****	894.6	35
Winimuset	645.1	61

Wolf Swamp	<u>913.9</u>	217
	29,914.2 acres	
*Management and control under DFW 1,673.7 ac		
DFW owned in fee 282.0 ac		
**Acreage includes 15.72 acre CR		
*** Listed and managed under Conn. Valley District		
**** 467 acres added from a 97 DCAM transfer		

Wildlife Conservation Easements: 4

North Quabbin CRs:

Tully Mountain	119.5	
Millers River	75.5	
Lawrence Brook	296.7	
Phillipston (Secret Lake)	<u>212.0</u>	
	703.7	

Wildlife Sanctuaries: 2

Susan B. Minns	140.0	20
Watatic Mountain	<u>100.0</u>	25
	240.0	

River Access Areas: 4

Five Mile River(inc 17 ac CR)	195.5	120
Natty Brook	95.2	220
Quinapoxet River	32.0	66
West & Blackstone Rivers	<u>28.0</u>	76
	350.7 acres	

Natural Heritage Areas: 3

Podunk Marsh	15.0	104
Clinton Bluff NHA	42.0	154
Quag Pond Bog	<u>31.0</u>	197
	88.0	

Conservation Restriction: 5

Carter Pond	280.0	155
Burnshirt River	5.64	160
Hunting Hills*	53.7	183
Quabbin	28.0	161
Stillwater River	<u>29.0</u>	162
	396.3	

*Part of Hunting Hill WMA in NE District

Marshes:1

Quinsigamond Marsh	59.0	156
--------------------	------	-----

Pond Access: 4

Cusky Pond	23.75	163
Fisherville Pond	1.6	166
Glen Echo Lake	1.0	149
Sputtermill Pond Area	<u>58.5</u>	164
	84.85	

Forest: 2

Hamilton	70.0	75
Northboro	<u>88.8</u>	51
	158.8	

TOTAL CENTRAL DISTRICT 31,995.6 acres

Northeast District

Wildlife Management Areas: 10	Acres	Tract #
Ashby	699.5	134
Crane Pond	2,160.6	38
Hunting Hills*	356.4	183
Martin H. Burns	1,554.5	37

Mulpus Brook	177.7	203
Nissitissit River	339.0	71
Pantry Brook	410.9	29
Salisbury Marsh	310.0	
Squannacook River**	1,045.8	53
William Forward	<u>2,122.5</u>	36&82
	9,176.9	

*Includes 53.7 acre CR in CD

** 21 acres title vested in DEM

Wildlife Sanctuaries: 5

Carr Island	110.5	18
Egg Rock	2.0	17
J.C. Phillips	391.0	15
Milk Island	29.0	19
Ram Island	<u>20.0</u>	23
	552.5	

Game Farm: 1

Ayer	96.9	1
------	------	---

Wildlife District: 1

District Headquarters	1.9	11
-----------------------	-----	----

Pond System: 1

Flint Pond	81.9	28
------------	------	----

Forest: 2

Acton	36.0	207
Townsend	<u>60.0</u>	33
	96.0	

Pond Access: 4

Knops Pond	0.6	52
Mascopic Lake	0.3	65
Baddacook Pond	0.16	A52
Long Sought For Pond	<u>1.0</u>	143
	2.06	

Salt Marsh: 1

North Shore	335.65	47 & 58
-------------	--------	---------

Stream Access: 6

Concord River	4.7	97
Ipswich River	1.8	204
Nashua River	68.5	110
Trapfall Brook	45.4	109
Sudbury River*	139.06	121
Weymouth Back River**	16.43	135
	275.89	

Natural Heritage Areas: 4

Boxboro Station	25.5	188
Eagle Island	5.0	199
Elbow Meadow	132.8	101
Hauk Swamp	<u>55.0</u>	206
	218.2	

TOTAL NORTHEAST DISTRICT 10,837.9 acres

*Held jointly with D.E.M.

**Departmental acquisition

Southeast District

Wildlife Management Areas: 16	Acres	Tract #
Copicut	2,771.8	141
Dartmoor Farms	473.0	236

Erwin Wilder	450.0	A83	Military Lands: 7		
Frances A. Crane	1,912.8	27	Dillingham Lot	37.0	45
Gosnold	3.5	96	Fisk Forestdale Lot	117.0	46
Haskell Swamp	2,630.1	218	Hog Pond Lot	26.2	42
Hockomock Swamp	4,453.7	83	Lawrence Pond lot	10.0	43
Hyannis Ponds *	357.0	187	Mashpee Pond Lot	25.0	40
Meetinghouse Swamp	109.0	214	Poponesset Beach	2.0	41
Noquochoke	204.6	208	Springhill Lot	<u>7.0</u>	44
Peterson Swamp	250.0	81		224.2	
Purchase Brook	120.0	215	Hatchery Land: 1		
Red Brook	400.0		No. Attleboro Hatchery	36.46	99
Rochester	70.0	57			
Rocky Gutter	3,038.7	68	Marsh Management: 1		
West Meadows	<u>221.9</u>	34	Eastham Area	7.44	136
	17,466.1				
Wildlife Sanctuaries: 4			Fisheries & Wildlife Area: 2		
Billingsgate Island	0.5	14	Muddy Pond	72.0	95
Penikese Island	60.0	21	South Barrier Beach (Leland)	<u>99.5</u>	194
Ram Island	2.0	22		171.5	
Tarpaulin Cove	<u>4.5</u>	93	Natural Heritage Areas: 11		
	67.0		Grassy Pond	59.4	168
Camp Cachalot CR	789.0	223	Grassy Pond Dennis	7.2	230
Wildlife District:1			Harlow/Cooks Pond	51.9	145
District Headquarters	23.8	12	Head of the Plains	2.0	138
Fish Hatcheries: 1			Katama Plains *	18.52	140
Sandwich	60.0	5	Mashpee Pine Barrens	180.55	105
Game Farm: 1			Miacomet Heath	3.83	186
Sandwich	133.0	3	Olivers Pond	12.0	139
Salt Marsh: 5			Sly Pond	192.0	137
Brayton Point	2.2	169	South Triangle Pond	10.26	198
Chase Garden Creek	56.4	205	Thad Ellis	<u>1.5</u>	195
English	191.5	146		544.1	
Fox Island	76.5	192	TOTAL SOUTHEAST DISTRICT	20,616.0	acres
South Shore	<u>22.4</u>	69			
	349.0		Total Acreage Area by Area Type		
Stream Access: 5			(Through FY 01)		
Childs River	0.25	193	Wildlife Management Areas: 116	105,077.5	acres
Mashpee River	56.47	78	Wildlife Sanctuaries: 13	1,197.0	
Nemasket River	0.46	122	Fish Hatcheries: 5	559.3	
Quashnet River**	426.0	32	Game Farms: 3	367.1	
Taunton River	<u>94.8</u>	219	Streambank: 28	1,970.2	
	578.0		Salt Marsh: 6	684.6	
Pond/Coastal Access: 11			Lake, Pond & Coastal Access: 22	195.1	
Agawam Mill Pond	1.2	216	Fisheries & Wildlife Areas: 2	171.5	
Bakers Pond	1.7	79	NHESP Areas: 29	1,675.6	
Bearse Pond	5.8	72	Conservation Restriction/Easements: 22	8,524.9	
Clapps Pond	68.4	87	(Some CR's are included in WMAs)		
Cooks Pond	3.0	73	Other*: 21	<u>912.8</u>	
Dogfish Bar Beach (PAB)	2.4	210	GRAND TOTAL	121,335.6	
Lake Snipatuit	0.5	92			
Sandy Point	0.2	54			
Scorton Creek	5.5	228			
Spectacle Pond	0.3	224			
Triangle Pond	61.5				
Wakeby Pond	<u>15.9</u>	242			
	166.4				

* NHESP priority area-Departmental taking

** 360 acres of Quashnet held jointly with DEM

*Includes: Pond Systems, Military Lands, Forest Areas, Wildlife Districts, Islands, Hatchery Land, MDC/F&W Areas and Marsh Management Areas.

Above figures include departmental acquisitions.

FEDERAL AID PROGRAM ADMINISTRATION

James M. Casey
Federal Aid Coordinator

The Division's apportionment of Federal Aid in Wildlife Restoration (Pittman-Robinson) funds, \$1,932,233 increased over last year's apportionment. These funds are available for wildlife restoration projects and hunter education. Six projects were reimbursed with these funds. Projects included wildlife research, hunter education, monitoring of wildlife population trends, harvest surveys, waterfowl research and management and wildlife habitat management.

The State's Federal Aid in Sport Fish Restoration Act (Dingell-Johnson and Wallup-Breaux) apportionment, \$2,408,529, represents a slight decrease from last year's apportionment. These funds were divided as follows: The Public Access Board, which is responsible for constructing and maintaining motorboat access facilities received \$361,279.35 (15%) and the balance of \$2,047,249.65 was equally divided (\$1,023,624.82 each) between the Division of Marine Fisheries and the Division of Fisheries and Wildlife. Nineteen grants are reimbursed with D-J and W-B funds; the Public Access Board has three boating access projects, the Division of Marine Fisheries conducts approximately ten fisheries projects and the Division of Fisheries and Wildlife has six projects. MassWildlife's D-J and W-B projects include aquatic research education, anadromous fish restoration and program coordination. The Division of Fisheries and Wildlife also uses these funds for hatchery operations, hatchery maintenance and distribution of hatchery fish.

The agency completed one land acquisition that was funded through the National Coastal Wetlands Conservation Grant program.

MassWildlife continues to receive a minimal amount of Endangered Species funding for its programs. The Natural Heritage and Endangered Species Section received approximately \$40,000 for Section 6 Endangered Species Act funding in 2001. This funding was used to partially reimburse MassWildlife for the cost of endangered species recovery projects for roseate terns and piping plovers.

MassWildlife's Federal Aid Administration project uses both Sport Fish and Wildlife Restoration funding. Administrative responsibilities include responding to questionnaires, public inquiries, DFW personal property inventory management, overview of projects performance and financial reporting, project assistance (both field and office) and field visits, and to serve as the liaison between U.S. Fish and Wildlife Service Federal Aid personnel and MassWildlife.

The Division of Fisheries and Wildlife contracted with the Auditor of the Commonwealth to conduct an audit of all Sport Fish and Wildlife Restoration grants administered by MassWildlife for fiscal years 1999 and 2000. The Coordinator's Office spent considerable time facilitating the audit by providing records, performing additional data analysis and coordinating audit efforts within the agency. This audit was still in process at the end of this reporting year.



Wood ducks.

MAINTENANCE & DEVELOPMENT

Gary Zima
Senior Planner

Division maintenance and development projects focused on the continuation of Capital Outlay - Open Space Bond projects. This funding has enabled us to address numerous upgrade and maintenance issues at our facilities. The following listing highlights the projects completed in FY01:

Districts and The Field Headquarters Complex

The Districts acquired 12 new gates for the maintenance of wildlife management area roadways.

Road maintenance and repairs were completed on the Hancock W.M.A. in the **Western Wildlife District**.

The construction of an Eel Passageway at the Westfield River Dam was completed in the **Connecticut Valley Wildlife District**.

A lead concentration study was initiated at the Lake Dennison Firing Range, Birch Hill W.M.A. in the **Central Wildlife District**. Preliminary investigations will focus on soil sampling and provide a site assessment report.

Renovations at the **Westboro Field Headquarters Complex** included upgrades to the Fisheries / Wildlife laboratory along with the installation of a foundation wall casement window for the G.I.S. Laboratory.

Hatcheries

The **McLaughlin Hatchery** received the bulk of funding for essential rehabilitation. All concrete pads and raceways were repaired and resurfaced. Electrical upgrades included the replacement of the main electrical service. To improve exterior hatchery lighting, the aging metal lamps were replaced with new aluminum light poles and fixtures. Well #3 was overhauled with a comprehensive cleaning and installation of new turbine pump and motor. To monitor hatchery water flow, a new alarm system was designed and installed. McLaughlin Hatchery operations concluded with the replacement of both hatchery domicile hot water boilers.

Improvements at the **Sandwich Hatchery** consisted of the redevelopment and cleaning of Well #1 and the repairs to the emergency backup generator.

Upgrades at the **Sunderland Hatchery** consisted of acquisition of a new flow meter on Well #2 and the replacement of the asphalt shingle roof on the residence.



Fish culture and stocking operations require regular maintenance of equipment and periodic renovations.

PERSONNEL REPORT

Peter Burke
Personnel Officer

New Hires

NAME	TITLE	DATE OF HIRE
Gibson, Gail	Receiving Teller I	12/03/00
Harding, Sergio	Conservation Biologist I	01/28/01
Szczebak, David	Conservation Biologist II	01/28/01
Beauregard, Kimberly	Administrative Assistant I	03/11/01
Henner, Chrissie	Game Biologist III	06/25/01
Putnam, Nancy	Scientist	07/06/00
Nelson, Michael	Scientist	07/09/00
Bullock, Corey	Scientist	07/17/00
Mostello, Carolyn	Scientist	07/17/00
Patalano, Jessica	Student Intern	07/24/00
Corcoran, Claire	Scientist	09/05/00
Polloni, Pamela	Scientist	09/10/00
Cookman, Lori	Scientist	02/26/01
Moruzzi, Trina	Scientist	02/26/01
Aucoin, Christina	Scientist	04/30/01
Ziel, Heather	Scientist	04/30/01
Parken, Shelagh	Planner	05/07/01
Burnham, Amy	Program Coordinator	05/27/01
McGrath, Erica	Program Coordinator	05/27/01
Coughlin, Mark	Laborer I	01/07/01
Clark, James	Laborer II	04/03/01
Johnson, Jason	Laborer II	04/06/01
Martinez, Hector	Laborer I	04/06/01
Thomasian, Robert	Laborer II	04/08/01
Woods, William	Laborer I	04/26/01
Thibault, Stacey	Laborer I	05/18/01
Thornton, Megan	Laborer I	05/20/01
Johnson, Stacy	Laborer I	05/20/01
Grossman, Scott	Laborer I	05/20/01
Roscoe, Lee	Laborer I	06/03/01

Promotions

NAME	TO TITLE	DATE OF PROMOTION	NOTES
Henry, Stephen	Fiscal Officer V	8/10/00	paid as FOVI
Casey, James	Aquatic Biologist III	11/13/00	
Isles, Douglas	Wildlife Technician II	2/18/01	
Woytek, William	Game Biologist III	2/25/01	
Langlois, Susan	Game Biologist III	2/26/01	

Leave of Absence

NAME	TITLE	TYPE OF LEAVE	LEAVE
Sienczyk, Elizabeth	Administrative Services Coordinator	LOAWOP	8/8/99 4/3/01
Amati, Eric	Game Biologist I	IAWP	3/8/01 3/26/01

Miscellaneous Transactions

NAME	TITLE	DATE OF ACTION	TYPE OF ACTION
Larson, Marion	Game Biologist II	07/02/00	paid as Gr22 work out of grade
Gibson, Gail	Receiving Teller I	12/04/00	change work hrs to 30 from 37.50
Morley, Robert	EDP Systems Analyst III	12/17/00	Transfer from 2350-0100
Hubbard, Colleen	Clerk III	01/21/01	return to ft from pt
Beals, Dale	Wildlife Technician I	02/17/01	reallocation
Breton, Jeffrey	Wildlife Technician I	02/17/01	reallocation
Cannata, Richard	Wildlife Technician III	02/17/01	reallocation
Chadwick, Lesley	Wildlife Technician II	02/17/01	reallocation
Chapin, Robert	Wildlife Technician II	02/17/01	reallocation

Corey, Wayne	Wildlife Technician II	02/17/01	reallocation
Davies, Adam	Wildlife Technician I	02/17/01	reallocation
Fortier, Daniel	Wildlife Technician I	02/17/01	reallocation
Gamelin, Richard	Wildlife Technician I	02/17/01	reallocation
Green, Ernest	Wildlife Technician I	02/17/01	reallocation
Guerin, Brian	Wildlife Technician I	02/17/01	reallocation
Hansen, Karl	Wildlife Technician I	02/17/01	reallocation
Isles, Douglas	Wildlife Technician I	02/17/01	reallocation
Jackson, Alan	Wildlife Technician I	02/17/01	reallocation
Janak, Robert	Wildlife Technician II	02/17/01	reallocation
LeBoeuf, Paul	Wildlife Technician II	02/17/01	reallocation
Moriarty, John	Wildlife Technician I	02/17/01	reallocation
Musiak, William	Wildlife Technician I	02/17/01	reallocation
Paterno, Salvatore	Wildlife Technician II	02/17/01	reallocation
Patterson, Christopher	Wildlife Technician I	02/17/01	reallocation
Saczawa, Lawrence	Wildlife Technician II	02/17/01	reallocation
Shampang, Jerry	Wildlife Technician II	02/17/01	reallocation
Siwicki, Edward	Wildlife Technician II	02/17/01	reallocation
Wright, James	Wildlife Technician II	02/17/01	reallocation
Wright, Stephen	Wildlife Technician I	02/17/01	reallocation
Gibson, Gail	Receiving Teller I	03/25/01	work hrs to 28.00
Gibson, Gail	Receiving Teller I	04/29/01	return to ft from pt

Terminations

NAME	TITLE LEFT	TYPE OF ACTION	DATE
Gibson, Gail	Receiving Teller I	resigned	7/10/00
Kopinto, John	Laborer II	retired	7/31/00
Regan, Patrick	Laborer I	resigned	10/2/00
Madore, Robert	EDP Systems Analyst III	deceased	10/18/00
McDonald, John	Game Biologist III	resigned	11/3/00
St. James, David	Laborer II	retired	1/2/01
Bennett, Robert	Laborer II	Disability Retirement	1/3/01
Burrell, Richard	Game Biologist II	retired	6/30/01
Grgurovic, M.	Scientist	termination	7/15/00
Hickler, Matthew	Scientist	termination	7/15/00
Mattice, Jennifer	Scientist	termination	7/15/00
Adams, Connie	Scientist	end of contract	7/16/00
Repucci, Gina	Researcher	termination	7/28/00
Simoneaux, Michelle	Scientist	termination	7/29/00
Hatch, Jeremy	Program Coordinator	termination	8/5/00
Hoyt, Walter	Planner	end of contract	9/30/00
Melito, Nancy	Planner	end of contract	9/30/00
Anderson, Jeanne	Scientist	end of contract	6/30/01
Polloni, Pamela	Scientist	end of contract	6/30/01
Mahre, Amy	Scientist	end of contract	6/30/01
Neid, Stephanie	Scientist	end of contract	6/30/01
Finton, Andrew	Scientist	end of contract	6/30/01
Fowle, Suzanne	Planner	end of contract	6/30/01
Gaughin, Chris	Scientist	end of contract	6/30/01
Ziel, Heather	Scientist	end of contract	6/30/01
Aucoin, Christine	Scientist	end of contract	6/30/01
Parken, Shelagh	Planner	end of contract	6/30/01

Seasonals

NAME	TITLE	END DATE
Archambault, Kimberly	Laborer I	7/8/00
Call, Daniel	Laborer I	7/8/00
Pelosky, Kevin	Laborer I	7/8/00
Rivest, Matthew	Laborer I	7/8/00
Vatousiou, Mark	Laborer I	7/8/00
Grossman, Scott	Laborer I	7/22/00
Langford, Richard	Laborer I	9/1/00
Thomasian, Robert	Laborer I	9/1/00
LaVoie, Eugene	Laborer I	9/30/00
Stone, Randall	Laborer I	9/30/00

LEGISLATIVE REPORT

Jack Buckley
Deputy Director for Administration

During this year the Legislature passed an act transferring a portion of the permitting authority for the trapping of beaver to local Boards of Health.

Chapter 139 Acts of 2000

Chapter 139 of the Acts of 2000 amended Chapter 131, section 80A by modifying the restrictions on beaver and muskrat traps to provide relief for people suffering from flooding impacts caused by beaver or muskrat. An emergency permitting system was created at the town level with certain non-emergency permits for specific traps available from the Division of Fisheries and Wildlife. This legislation essentially placed a significant amount of responsibility for decisions on the control of beaver and muskrat at the local level.

The amended Chapter 131, section 80A established a permitting process to allow certain people to use restricted traps to address public health or safety problems caused by beaver or muskrat. This new process includes three state agencies and two local Boards. A new permitting process was established whereby the local Board of Health makes a determination as to whether a complaint is caused by beaver or muskrat and constitutes a threat to public health or safety as defined in Chapter 131, section 80A. If affirmative, the Board issues a 10-day emergency permit to allow: 1) beaver/muskrat trapping, 2) dam breaching and/or 3) installation of a water flow device. If the complainant chooses to breach a beaver dam or install a water flow device, approval of the local Conservation Commission is required. If after 10 days the problem is not solved, the complainant may apply for a 30-day extension permit from the Division of Fisheries and Wildlife. While waiting for such permit to be issued, the complainant may apply for another 10-day emergency permit from the local Board of Health. If after the first two 10-day emergency permits expire and the complainant has not received the 30-day extension permit, he/she may apply for a third 10-day emergency permit from the local Board of Health. This third permit does not, however, allow trapping. Once the 30-day extension permit is approved by DFW, the applicant also receives a non-lethal management plan designed to provide long-term solutions to the problem.

In addition, the law provides for an appeal process whereby DPH determines whether the local Board of Health erred relative to what constitutes a threat to public health or safety, and DFW determines whether the problem was, in fact, caused by beaver or muskrat.



FINANCIAL REPORT

Financial Staff

Stephen Henry, *Assistant Director*
Financial Affairs

Mary Cavaliere

Gail Gibson

Lillian Hew

Yunus Khalifa

Nancy Melito

Carl Lui

Elizabeth Sienczyk

Helen Yung

How the Sportsmen's Dollar Was Spent

Inland Fish and Game Fund

July 1, 2000 to June 30, 2001

PROGRAMS/ASSESSMENTS	EXPENDITURES	PERCENTAGES
ADMINISTRATION:		
Administration	\$1,161,208	
Information/Education	\$616,145	
Total	\$1,777,353	15.82%
Fisheries and Wildlife Programs:		
Hatcheries	\$1,297,539	
Game Farms	\$340,240	
Cooperative Units	\$90,390	
Fisheries and Wildlife Management	\$3,334,523	
Total	\$5,062,692	45.08%
Other Programs:		
*Natural Heritage Program	\$165,126	
Hunter Safety Program	\$239,684	
Waterfowl Management Program	\$51,225	
Land Acquisitions	\$1,825,038	
Total	\$2,281,073	20.31%
Other Assessments:		
Retirement Fund	\$922,050	
Group Insurance & Other Fringe Benefits	\$1,188,213	
Total	\$2,110,263	18.79%
TOTAL EXPENDITURES	\$11,231,381	100.00%

*50% of Natural Heritage Program Expenditures charged to Inland Fish and Game Fund;
50% to the Nongame Wildlife Fund.

Summary

Revenues, Expenditures and Fund Equity

Natural Heritage & Endangered Species Fund

July 1, 2000 to June 30, 2001

REVENUES:

Nongame Wildlife Tax Checkoff Donations	\$186,775
Direct Donations and Fund Interest	\$1,335
Sales Other	\$28,484
Federal Aid and Indirect Costs Reimbursements	\$96,748
TOTAL REVENUES	<u>\$313,342</u>

EXPENDITURES:

Nongame Wildlife Program	\$106,818
Natural Heritage Program*	\$165,126
Fringe Benefits Costs	\$52,295
TOTAL EXPENDITURES	<u>\$324,239</u>

TOTAL FUND EQUITY	(\$9,277)
--------------------------	------------------

Other Funds and Programs Expenditures (Division Wide)

July 1, 1999 to June 30, 2000

CAPITAL OUTLAY FUNDS and OTHER APPROPRIATIONS:

Suburban Wildlife Management (General Fund)	\$67,336
GIS Bio-Map Project (Bond)	\$1,220,997
Upland Wildlife Habitat Management (Bond)	\$274,849
Habitat Restoration Project (Bond)	\$183,436
Bald Eagle Project (Trust)	\$410
Tern Restoration - New Bedford Harbor Project (Trust)	\$96,212
Coastal Plain Ponds (Federal Grant)	\$189
Reptile & Amphibians Habitat Protection (Federal Grant)	\$1,456
Priority Wetlands & Riparian Habitats (Federal Grant)	\$33,708
Lake Surveys for TMDL (DEP Grant)	\$45,708
Vernal Pool Program (Bond)	\$12,000
Fish Sampling Equipment Acquisition and Field Work (Bond)	\$45,000
Eel-way Construction - Westfield River (Bond)	\$11,466
McLaughlin Hatchery Renovations (Bond Funds)	\$639,478
Vehicle Replacement (Bond Funds)	\$176,134
Sunderland Hatchery Renovations (Bond Funds)	\$79,440
Sandwich Hatchery Renovations (Bond Funds)	\$132,659
Publication: Critters of Massachusetts	\$10,000
TOTAL EXPENDITURES	<u>\$3,030,478</u>

Summary Revenue and Fund Equity Inland Fish and Game Fund

July 1, 2000 to June 30, 2001

DEPARTMENTAL REVENUES:	Amount
Fishing, Hunting and Trapping Licenses	\$4,715,364
Archery Stamps	\$116,660
Primitive Firearms Stamps	\$86,994
Trap Registrations	\$840
Waterfowl Stamps-Administration	\$8,877
Waterfowl Stamps-Ducks Unlimited	\$10,225
Waterfowl Stamps-Other	\$30,676
Wildlands Stamps	\$942,077
Antlerless Deer Permits	\$181,111
Bear Permits	\$11,631
Turkey Permits	\$69,098
Special Licenses, Tags and Posters	\$79,184
Magazine Subscriptions	\$112,091
Sales, Other	\$9,213
Fines and Penalties	\$40
Rents	\$167,996
Miscellaneous Income	\$100,205
Miscellaneous Refunds Previous Years	\$897
Debt Collection	\$79,948
Total	\$6,723,127
FEDERAL AID REIMBURSEMENTS:	
Dingell-Johnson (Fisheries)	\$244,575
Pittman-Robertson (Wildlife)	\$704,683
Indirect Cost Reimbursement	\$414,055
Total	\$1,363,313
TAXES:	
Gasoline Tax Apportionment	\$866,762
OTHER FINANCIAL SOURCES:	
Reimbursement for Half-Price Licenses	\$90,027
Investment Earnings	\$176,227
Total	\$266,254
TOTAL REVENUE	\$9,219,456
FUND EQUITY AS OF JUNE 30, 2001	\$3,380,547

License and Stamp Sales

July 1, 2000 to June 30, 2001

Type of License/Stamp	Unit Cost	Quantity	Amount
Resident Citizen/Alien Fishing	\$22.50	108,816	\$2,448,360.00
Resident Citizen Minor Fishing	\$6.50	4,768	\$30,992.00
Resident Citizen Fishing (Age 65-69)	\$11.25	3,723	\$41,883.75
Resident Citizen Fishing (Over 70, etc.)	FREE	11,563	\$0.00
Non-Res. Citizen/Alien Fishing	\$32.50	6,463	\$210,047.50
Non-Res. Citizen/Alien Fishing (3-day)	\$18.50	1,885	\$34,872.50
Resident Citizen Fishing (3-day)	\$7.50	815	\$6,112.50
Non-Res. Minor Fishing	\$8.50	238	\$2,023.00
Duplicate Fishing	\$2.50	715	\$1,787.50
Resident Citizen Trapping	\$30.50	221	\$6,740.50
Resident Citizen Minor Trapping	\$6.50	3	\$19.50
Resident Citizen Trapping (Age 65-69)	\$15.25	12	\$183.00
Duplicate Trapping	\$2.50	15	\$37.50
Resident Citizen Hunting	\$22.50	23,395	\$526,387.50
Resident Citizen Hunting (Age 65-69)	\$11.25	800	\$9,000.00
Resident Citizen Hunting (Paraplegic)	FREE	200	\$0.00
Resident Alien Hunting	\$22.50	135	\$3,037.50
Non-Res. Cit./Alien Hunting (Big Game)	\$94.50	1,495	\$141,277.50
Non-Res. Cit./Alien Hunting (Small Game)	\$60.50	678	\$41,019.00
Resident Citizen Minor Hunting (Age 12-17)	\$6.50	1,102	\$7,163.00
Duplicate Hunting	\$2.50	334	\$835.00
Resident Citizen Sporting	\$40.00	32,471	\$1,298,840.00
Resident Citizen Sporting (Age 65-69)	\$20.00	1,948	\$38,960.00
Resident Citizen Sporting (Over 70)	FREE	9,931	\$0.00
Duplicate Sporting	\$2.50	832	\$2,080.00
Quabbin 1-Day Fishing	\$5.00		\$9,460.00
Comm Shtg Preserve (1-day)			\$2,070.00
Total License Sales (GROSS)		212,558	\$4,863,188.75
Archery Stamps	\$5.10	22,971	\$117,152.10
Primitive Firearms Stamps	\$5.10	17,120	\$87,312.00
Collectors (Archery & Primitive Firearms Stamps)			\$1,006.00
Collection of Bad Debts and Shortage Payments			\$79,948.28
Fees Retained by Clerks			(\$34,523.80)
Licenses-Refunds			(\$2,174.22)
Trap Registrations			\$840.00
Bad Checks/Shortages			(\$112,942.70)
Total License Sales (NET)			\$4,999,806.41
Waterfowl Stamps	\$5.00	8,945	\$44,725.00
Collectors (Waterfowl Stamps)			\$6,395.50
Fees Retained by Clerks			(\$1,342.25)
Wildlands Stamps	\$5.00	187,552	\$937,760.00
Wildlands Stamps (Donations)			\$4,541.66
Wildlands Stamps (Refunds)			(\$225.00)
Total License/Stamp Sales (NET)			\$5,991,661.32

