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Connecticut Wildlife

PUBLISHED BY THE CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF NATURAL RESOURCES - WILDLIFE DIVISION

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2003 - Year in Review
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From the Director

From the Wildlife Division's perspective, 2003 was a year of big challenges and big opportunities. The loss of nearly 20% of our work force due to early retirements and the state's fiscal crisis created our biggest challenge, causing us to identify our highest priorities and reallocate resources. As a result, several key programs, including state lands habitat management, deer/turkey, conservation education/firearms safety, and conservation education programs at Sessions Woods are operating less effectively due to reduced manpower. Some administrative functions, such as our regulations proposals, were significantly delayed and our urban wildlife program was virtually eliminated. To date, we have not gotten any of our lost positions back and, like many other Divisions within DEP, we are trying to do our best with the resources available. However, as you can see in our "Year in Review," we still accomplished a lot in 2003.

The opportunities included two new federal programs, the State Wildlife Grants (SWG) and the Landowner Incentive Program (LIP). SWG and its predecessor, the Wildlife Conservation and Restoration Program, were established by the U.S. Congress to assist the states with comprehensive wildlife management. While the annual appropriations under SWG fall short of the Pittman-Robertson model for long-term, predictable funding, they have paved the way for us to initiate many important nongame and habitat projects. Our most ambitious project is a work in progress – developing a statewide comprehensive wildlife conservation plan. The plan will be completed during 2004 and will be a blueprint for prioritizing our wildlife conservation actions over the next decade. Under LIP, Connecticut has received baseline federal funds to implement a private lands habitat enhancement program. In October 2003 we submitted a grant application to compete for supplemental funds that would allow us to partner with conservation organizations and landowners to enhance hundreds of acres of important habitat.

The State Legislature provided us with two prominent opportunities in 2003. The first was passage of a bill that clarifies the Commissioner's authority to employ a full range of professionally accepted methods to address special circumstances posed by overabundant, invasive or destructive species of wildlife. It gives the agency more tools to achieve a balance between wildlife, humans and habitat and will help maintain wildlife as a public asset rather than a liability. The Legislature also passed a bill that was supported by many conservation organizations and championed by Audubon Connecticut to establish a Wildlife Conservation License Plate. Connecticut joins dozens of other states that have a wildlife license plate, and thus will be able to generate funds to a dedicated account that can serve as the required state match for LIP and SWG projects.

The challenge before us in 2004 is to maximize the potential of these opportunities. We look forward to working with our partners at DEP, other state and federal agencies, conservation organizations, universities and the general public during the upcoming year to accomplish great things for Connecticut's wildlife.

Dale W. May

Cover:

Nest boxes frequently provide winter shelter for a variety of wildlife species, including the eastern screech owl. For information about nest boxes, contact the Wildlife Divisions' Sessions Woods office or visit the DEP Wildlife Divisions' website at www.dep.state.ct.us.

Photo courtesy of Paul J. Fusco

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The Federal Aid in Wildlife Restoration Program was initiated by sportsmen and conservationists to provide states with funding for wildlife management and research programs, habitat acquisition, wildlife management area development and hunter education programs. Each issue of Connecticut Wildlife contains articles reporting on Wildlife Division projects funded entirely or in part with federal aid monies.



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Year in Review 2003

CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION - BUREAU OF NATURAL RESOURCES - WILDLIFE DIVISION

In 2003, the DEP Wildlife Division staff worked diligently to continue ongoing projects, as well as make progress on the second year of several new projects made possible by a federal grant from the Wildlife Conservation and Restoration Program (WCRP). Work also was started on developing a Comprehensive Wildlife Conservation Plan (CWCP), as required by the U.S. Congress in legislation establishing the State Wildlife Grants (SWG) Program. SWG provides much needed funding for projects focused on "species in greatest need of conservation." Look for more on the CWCP and SWG in upcoming issues of Connecticut Wildlife.

Although the Division was faced with several challenges over the year, including budget cuts and loss of personnel through layoffs and retirements, you can see from the following annual report that much was accomplished.

Research/ Monitoring

The Migratory Bird Stopover Habitat Survey entered its second field season. Point-count surveys were conducted by Division staff and volunteers during the spring and fall bird migrations. Results from the surveys will help the Division identify priority migration stopover sites and guide conservation efforts. Grassland birds were the focus of another important survey.

Potential red-headed woodpecker habitat was surveyed to provide more information about the current status of this state-endangered species. Reports of red-headed woodpeckers in Connecticut, dating back to 1863, were catalogued, and breeding sites reported as far back as the 1950s were reassessed for current suitability. A life history summary was completed and a public red-headed woodpecker sighting card will be produced in 2004.

Research to gain population information on black bears through trapping and tagging continued in 2003. Twenty-one bears were captured, including 13 that were not tagged previously. Four females were fitted with radiocollars. Dens of seven females radiocollared in 2002 were inspected in late winter and 17 young cubs were examined.

The third year of the New England and eastern cottontail distribution study was completed. Over 700 specimens from 97 towns were collected and identified. The New England cottontail was documented from 21 towns. A radiotelemetry study continued to evaluate home range size, habitat use and mortality rates of both cottontail species.

Two natural resource inventories were completed at Babcock Pond and Goshen Wildlife Management Areas. These inventories will be invaluable when developing early successional habitat management strategies. The inventories identified plant communities, rare species and non-native invasives, and included



J. FISCHER

While instructing a session for the Master Wildlife Conservationist Program, Roger Wolfe, of the Wildlife Division's Wetland Habitat and Mosquito Management Program, explains how a salt marsh was restored.

surveys of butterflies during June to September.

Work is almost completed on a web site for the identification of native dragonflies and damselflies. A pocket guide to identify Connecticut's freshwater mussels was completed. Both projects will be an asset to future field surveys of these invertebrates.

Shorebird use of three major horseshoe crab breeding areas was monitored. In two years of observations, no shorebirds were observed feeding on horseshoe crab eggs at these locations. Unlike Delaware Bay, Connecticut's coastline is not a major stopover for shorebirds heading to their Arctic breeding areas. Connecticut has fewer total shorebirds and a lower species diversity. It's possible that the species that rely heavily on horseshoe crab eggs have reached such low population levels that Connecticut sees only remnants of these populations. As shorebird populations increase in other regions, horseshoe crabs and their eggs may become more important to Connecticut's shorebirds. A total of 70 sites were initially evaluated for potential shorebird use. After evaluation of site characteristics, only about one-quarter of the sites were documented to be well used by shorebirds.

The final phase of a two-year study investigating strategies to manage urban deer populations in Greenwich is nearly completed. The study involved capturing, marking and radio-tracking 58 adult female deer, conducting surveys of hunters and residents and evaluating factors that contribute to deer/vehicle accidents. Partners in this project are the University of Connecticut and the Town of Greenwich.

Spotlight surveys of white-tailed deer were conducted in Groton and Greenwich to evaluate sex ratios, fawn recruitment and model population dynamics of deer in these areas.

Biological data were collected throughout the state at check stations during the deer shotgun hunting season. As part of an effort to

monitor for chronic wasting disease (CWD), heads of harvested deer were collected at select check stations throughout the state. Testing results are not yet available; however, CWD has not been documented in Connecticut's deer population.

Four pairs of peregrine falcons (state endangered) nested in the state. All 10 chicks that fledged from the nests were fitted with identifying leg bands by the Wildlife Division. Eight pairs of bald eagles (state endangered, federally threatened) attempted to nest in the state. Six nests produced and fledged 10 chicks (which were banded by the Wildlife Division) and two nests failed.

Surveys for the state endangered bog turtle were conducted at four locations.

Locations of viable populations of state endangered Puritan tiger beetles were surveyed as part of a long-term study. For a fourth year, Puritan tiger beetle larvae were removed from one of Connecticut's largest populations and relocated to augment a declining population in Massachusetts.

Breeding sites of the state endangered banded bog skimmer dragonfly were monitored and potential new sites were surveyed.

Nesting pairs of state and federally threatened piping plovers and state threatened least terns were monitored at coastal nesting areas.

Several additional bird surveys were conducted in 2003, including the breeding waterfowl and midwinter waterfowl surveys, summer mute swan survey, wetland bird callback survey, woodcock/mourning dove survey and ruffed grouse drumming counts. Dabbling ducks were live-trapped during summer and fitted with identifying leg bands. The annual midwinter eagle survey was conducted in January when 77 eagles were counted.

Data were collected during the second year of a four-year study to assess the growing resident Canada goose population.

Brant were captured and equipped with satellite transmitters to monitor the timing of migration and to identify important stopover sites and breeding areas.

A four-year study of American woodcock was initiated in concert

with the University of Connecticut to assess the population, habitat, survival and cause specific mortality of woodcock, as well as the effect of contaminants.

A study of 16 major inland impoundments (ponds, marshes) was completed after two years. The impoundments were surveyed to assess waterfowl use, vegetative composition and water quality. The resulting information will assist in the management of these freshwater areas.

Sightings of black bears, bobcats and fishers were recorded as an index of population levels and distributions. One-year sighting totals for each species were the highest recorded. Black bear sightings nearly doubled from the previous year, indicating the dramatic increase in this species. Vehicle kills of bobcats (27) and fishers (38) continued at a high level.

Trapping permits were issued on 47 of the 83 state land parcels and 91 permits were issued. State land harvest is generally 10-20% of the statewide harvest total. Licensed trappers were surveyed to determine furbearer harvest levels, trapper activity levels, the amount of trapping to resolve problems and the incidence of mange in trapped animals, as well as to gather sightings of bears, bobcats and fishers. Activity levels of trappers and harvest levels were lower, probably because of the severe winter weather as compared to previous seasons. Greater than 60% of the beavers trapped were taken to resolve beaver problems. Pelt tagging is used to obtain harvest numbers for six species. Pelt tagging totals were low, with approximately one-half the number of furbearers that were tagged in the 2001-2002 season. The beaver harvest was the lowest recorded harvest in 20 years.

Carcasses of 71 river otters were examined for age and reproductive information. Reproductive indices for this sample were similar to those observed over previous seasons. Twenty-nine coyotes, 31 fishers and 27 bobcats were examined for age and reproductive information, as well as food habits.

To evaluate the success of a wetland restoration project at East River Marsh in Guilford, an assessment of bird use in restored areas

January



During snowy winters, Wildlife Division personnel check state properties for the presence of tracks left behind by such furbearing mammals as bobcats, fishers, coyotes and otters. Snow tracking, along with sightings and road kill data, help the Division monitor the populations of these animals.

February

With the onset of cold weather and thick ice, Wildlife Division personnel are able to collect wood duck population breeding data from most of the approximately 600 nest boxes on state property. Personnel inspect the boxes for the presence of unhatched eggs and egg fragments or membranes. The boxes are also cleaned out in anticipation of nesting in the upcoming spring. Pictured is Division field assistant Jim Warner.



March



Dens of seven female black bears that were fitted with radiocollars in 2002 were inspected in March 2003 to determine if any of the females had given birth. All seven females had produced cubs, 17 in all. The adult females were immobilized and examined. The cubs also were examined, weighed and sexed. The females and cubs were returned to the winter den after all data were collected. Pictured is Furbearer Program biologist Paul Rego.

Left to right: P. FUSCO, J. OLESWESKI, P. FUSCO

was undertaken. Birds were observed during different tidal stages and their activities and the habitats they were using were recorded.

During the second year of a three-year monitoring program of wetland restoration work at the Roger Tory Peterson Wildlife Area in Old Lyme, data were collected on water quality, vegetation and bird use of the area. Recently restored wetlands at the Quinnipiac River Marsh in New Haven and the Dodge Paddock Marsh system in Stonington also were monitored.

Wildlife Division staff participated in BioBlitz 2003 at Bates Woods Riverside and Ocean Beach Parks in New London. The BioBlitz is an annual event coordinated by the Connecticut State Museum of Natural History. The event is based around an intensive 24-hour survey of an urban park where participants attempt to identify as many species as possible. Members of the Division's Wildlife Diversity Unit surveyed for bats using fine-threaded nets called mist nets.

Management

Six marsh restoration projects were completed in 2003. Salt marsh projects were undertaken at Chandler Road near Hager Creek in Old Saybrook, Stony Creek Marsh in Branford, Fletcher Creek culvert repairs in Milford and Juraine's Marsh near Morris Creek in East Haven. Freshwater marsh enhancement projects included Laurel Marsh in Manchester and an Interstate 95-Department of Transportation marsh project in Branford.

Five different crews treated 660 acres of coastal marshes with herbicides to control the invasive plant, *Phragmites*. The crews consisted of two state crews, two state-contracted vendors and a crew that worked for The Nature Conservancy at Lord's Cove and Lieutenant River in Lyme and Old Lyme.

The Lynde Point Marsh Restoration Project was initiated in

October in the Fenwick section of Old Saybrook. Fill that was placed on the site in the 1930s is being removed from a 10-acre area.

Mosquito control specialists inspected state-owned coastal properties for mosquitoes and treated breeding areas with larvacides throughout the summer. The Wetland Habitat and Mosquito Management Program assisted towns in establishing mosquito surveillance and control programs. Staff members met with public health officials to review local wetland sites and answer questions about mosquitoes.

Brushmowing was conducted on old fields and grasslands at 12 wildlife management areas (WMAs), totaling 290 acres. A brontosaurus (drum style mower/mulching machine) was used to restore 81 acres of old field habitat at seven WMAs. Prescribed burns helped restore/enhance 24 acres of old fields at Babcock Pond WMA and Naugatuck State Forest. Native warm season grasses (big bluestem, little bluestem, indiangrass, switchgrass) were planted on 20 acres at Sugarbrook WMA. Agricultural-early successional stage habitats (1,500 acres) are maintained cost-effectively through the administration of 60 agricultural agreements.

A statewide assessment was developed outlining habitat and maintenance needs for all WMAs. This will greatly assist in the development of management plans and prioritizing projects as resources become available.

Cooperative Wildlife/Forestry Division management plans were developed/implemented for Kollar, Babcock Pond and Sessions Woods WMAs. The plans promote forest habitat diversity, with an emphasis on creating mosaics of forest species and age structures.

The emphasis at state land impoundments was to install and monitor water level control devices (WLCD) and to evaluate their usefulness as a management tool in achieving desired water levels. Beaver activity has created extremely high water levels at the majority of the impoundments, resulting in low quality habitat for the majority of wetland dependent wildlife species. WLCDs have

April

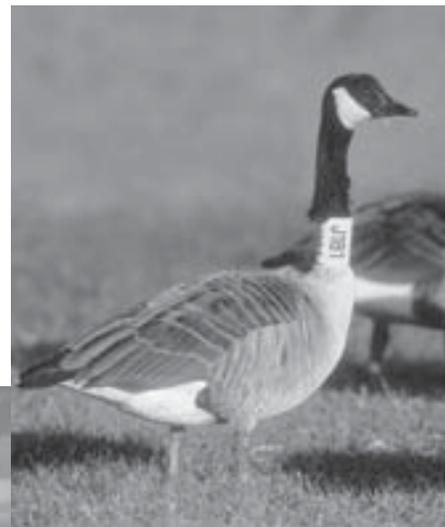
May

June



Grassland birds were the focus of another important survey. Division staff and volunteers visited a series of points for five minutes each in grassland/farmland areas into July and recorded all birds seen or heard. This survey is important for monitoring populations of grassland dependent birds, many of which are declining. Pictured is research contractor J.T. Stokowski, who is searching for grassland birds at Bradley International Airport.

The Wildlife Division continued a WCRP-funded project to document the use of Connecticut's major river corridors as stopover habitat for spring and fall migratory birds. Migratory bird stopover surveys were conducted in the spring and fall of 2003. A total of 41 locations were surveyed and all birds seen or heard during a 10-minute survey were recorded. Data were collected on more than 4,400 individual survey points statewide. The surveys will continue in 2004.



P. J. FUSCO (8)

During the second year of a four-year study to assess the growing resident Canada goose population, 1,507 geese were live-captured at 43 different sites throughout the state. Metal leg bands were placed on all of the geese and yellow neck collars were placed on 500 geese.

been installed and maintained at 25 sites in an effort to reverse this trend. Data collected include status of beaver activity, function and condition of the WLCD, target water levels, feeder stream flow readings and water depths. Within the next several months, the Division plans to develop an evaluation process to determine where WLCDs are most likely to be successful. A final report and recommendations regarding the applicability of WLCDs on state and private lands will be prepared.

At least 500 wood duck nest boxes were maintained on state land.

A controlled hunt was held on portions of Mansfield Hollow State Park, in Mansfield, to reduce impacts of deer on a unique plant community, which indirectly affected several rare and endangered invertebrates.

Recreation Management

Work continued on the development of a coastal birding trail. Nominations of sites were collected throughout 2003 and those sites were evaluated for their suitability. Updates on this project can be found at www.ctbirdingtrails.org.

Bird viewing areas were developed at four WMAs under a WCRP grant to enhance the public's understanding of the value of early successional habitats and the various techniques used to manage these critical and vanishing areas. Activities included habitat enhancement, construction of a bird viewing blind and development and installation of interpretive signs.

A revised map series featuring major hunting areas was made available through the DEP's web site and will continue to be updated as new maps become available.

Public access for small game hunting was secured through renewals or new agreements with 21 landowners, totalling 2,225 acres.

Improvements to the shooting range at the Franklin Wildlife facility, which is used by the Conservation Education/Firearms Safety Program, continued with the construction of a new state-of-the-art trap house and a new roof for the 100-yard shooting platform.

During the fall hunting season, 17,625 ring-necked pheasants were released on 50 state-owned, state-leased and permit-required hunting areas. Cooperative sportsmen's clubs released pheasants at various public hunting areas.

The Wildlife Division was awarded a special grant for the purchase of pheasants for private sportsmen's clubs hosting youth pheasant hunter training days. This project was supported by the 2003 Hunting Heritage Partnership, a grant program of the National Shooting Sports Foundation.

Standard WMA entrance signs were installed at five WMAs to provide maps, general hunting information, Federal Aid funding recognition, and brochures about Habitat Management Program activities and safety guidelines for hikers, hunters and horse users.

Three vandal resistant gates were installed to control access at Naugatuck State Forest and Kollar WMA.

Several WMA entrance ways were maintained through the use of herbicides at parking areas, mowing of entrance ways, painting of gates and signs, replacement of boundary and regulatory signs and emergency repairs of roads.

Technical Assistance

DEP Wildlife Division staff members spend a considerable amount of time responding to the continuous flood of requests for general wildlife information and for help in resolving wildlife problems and concerns. Many of the problems involve common wildlife that are well adapted to living near people, such as coyotes, foxes, geese, deer, raccoons, skunks and beavers. Division personnel provide information and guidance about recommended solutions and legal control methods for nuisance wildlife situations. For problems involving such animals as beavers, deer, bears and geese, on-site inspections and assistance in resolving severe

July

August

September



Shoreline nesting locations for state and federally threatened piping plovers and state threatened least terns were once again fenced for protection in 2003. Thirty-seven pairs of piping plovers fledged 48 chicks, while 175 pairs of least terns fledged 200 chicks. Pictured is Joan Meek, one of several volunteers who helped put up fencing, as well as monitored the nesting activities of plovers and terns.

Restoring, enhancing and maintaining early successional habitats requires the use of a variety of techniques, from brush mowing (below), to prescribed burning, brontosaurus contracts (drum style mower/mulching), herbicide treatment, forest management practices and grassland seedings.

During 2003, brushmowing was conducted on old fields and grasslands at 12 wildlife management areas (WMAs), totaling 290 acres and a brontosaurus was used to restore 81 acres of old field habitat at seven WMAs.



Master Wildlife Conservationist Daniel Sawka (left), a certified scuba diver, searched for freshwater mussels in the deeper rivers while accompanied by Wildlife Diversity Unit biologist Julie Victoria. A pocket guide to help in the identification of freshwater mussels was recently published and is being offered to those wishing to help the Division search for freshwater mussels. Six of the 12 native mussel species are listed as endangered, threatened or special concern in Connecticut.

Left to right: P. FUSCO, P. FUSCO, P. CAPOTOSTO

agricultural, ecological or public health and safety damages are often required. For example, Division staff handled 62 deer damage and 198 beaver complaints requiring 50 on-site deer damage inspections and 81 beaver inspections.

Responses were provided to numerous complaints and information requests about black bears, coyotes and foxes. Complaints regarding black bears increased during 2003 and originated almost exclusively from northwestern towns. Complaints included 258 cases of bears visiting or damaging birdfeeders, four reports of bee hive damage, 80 reports of raided garbage, 13 cases of livestock attacks, 11 cases of damage to buildings and two home entries. These numbers should be viewed as a sample because many problems are not reported. A bear was trapped and aversively conditioned after it had killed sheep in Morris and a bear was chemically immobilized and relocated after it had entered downtown Middletown.

The Wildlife Division administers Nuisance Wildlife Control Operators (NWCs) who provide commercial wildlife control services to persons seeking help in resolving common wildlife problems. The Connecticut Nuisance Wildlife Control Operator's Association works closely with the Division to train NWCs in wildlife damage identification and control methods. In 2003, there were 270 licensed NWCs and 77 persons completed NWC training.

An advanced training workshop was held to instruct NWCs on techniques for addressing problem coyotes and foxes.

Each year, the Wildlife Division responds to hundreds of calls from the public regarding sick, injured and orphaned wild animals. Because the DEP does not have the resources to provide care for these animals, it relies on a network of volunteer wildlife rehabilitators that consists of private individuals, nonprofit nature centers and local veterinarians who have been trained and who have appropriate facilities to house wildlife species until they can be returned to the wild. In 2003, 246 individuals were authorized to care for animals in need. Of that group, five had the resources to care for orphaned fawns and 28 had specialized training and authorization for the handling of rabies vector species, namely skunks, raccoons and foxes. In addition, 41 individuals received federal permits to care for birds protected by the Migratory Bird Treaty Act. This group of wildlife rehabilitators handled and cared for 10,051 animals, which included nearly 5,600 birds, 3,800 mammals (includes almost 100 fawns), nearly 200 reptiles and amphibians and about 450 rabies vector species. More than half (5,552) of the animals cared for were released.

Technical assistance on enhancing habitat for wildlife was provided to several towns, affecting 845 acres of habitat. On-site habitat enhancement assistance was

provided to 10 landowners owning a total of 5,000 acres and 20 landowners were certified through the Division's Backyard Habitat Program. In addition, on-site assistance was provided to 12 municipalities regarding habitat enhancement and trails on 700 acres.

Advice and technical guidance on deer population management was provided to communities or homeowner associations in Darien, Wilton, Greenwich, Groton and Ridgefield.

Division biologists participated in five Environmental Review Team proposals covering 1,602 acres and reviewed six DEP road design projects and 10 DEP internal project proposals. Staff also rated 135 land acquisition proposals, 23 proposed land use changes and 59 municipal grant applications.

The Division continued to work with the Natural Resources Conservation Service and the USFWS to keep updated on federal cost-share programs (Wildlife Habitat Incentives Program, Conservation Reserve Program and Partners in Wildlife) and to provide applicable technical assistance to landowners that may be eligible to participate in these programs. Currently, the DEP has received Partners Program funding for five private land projects involving old field restoration, woodcock alder enhancement and warm season grass establishment. These projects are scheduled for the 2004 field season.

October

The Lynde Point Marsh Restoration Project was initiated by the Wetland Habitat and Mosquito Management Program in October in the Fenwick section of Old Saybrook. The marsh, which was filled with dredged spoils in the 1940s, had lost all natural wetland functions and values and had become dominated by Phragmites. The restored wetland will contain small channels and seven small ponds.



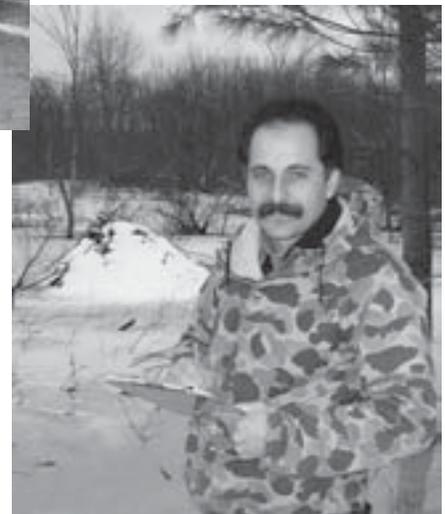
November



Every November, during the deer shotgun hunting season, Wildlife Division personnel collect biological data from harvested deer to monitor changes in the health of Connecticut's deer population. Data collected include age, sex, weight, antler beam diameter (of yearling bucks) and location of harvest. Deer heads also were collected at select stations as part of a monitoring effort for chronic wasting disease. Pictured is Paul Fusco of the Division's Wildlife Outreach Unit.

December

The Wildlife Division has been studying the effectiveness of water level control devices (WLCD) in achieving desired water levels at 25 different impoundments affected by beaver activity. Data collected include status of beaver activity, function and condition of the WLCD, target water levels, feeder stream flow readings and water depth. Pictured is Habitat Management Program biologist Peter Picone.



Left/right: P. CAPOTOSTO, B. ROACH, P. FUSCO

The Division received a donation of a specialized no-till warm season grass seeder from the Connecticut Chapter of the National Wild Turkey Federation that will be used on state and private land grass establishment projects.

Of special significance this past year was the approval of a Landowner Incentives Program grant from the USFWS. The grant will allow the Wildlife Division to establish a private lands habitat enhancement program dedicated to species and habitats at-risk on privately owned lands throughout Connecticut. The basic elements of the program involve project administration, including development of a fair and equitable process of delivering resources to the public; education and outreach, including the development of written guidelines, presentations and web site development; and assistance to landowners to protect, enhance and restore species or habitats at-risk. High priority habitats include grasslands, old fields, seedling/sapling forests and wetlands. Stay tuned to future articles in *Connecticut Wildlife* to learn more about the development of this new and exciting program.

Education and Outreach

Master Wildlife Conservationists performed close to 1,800 hours of volunteer service, assisting with Division outreach and research efforts. Twenty-two new individuals took the Master Wildlife Conservationists curriculum offered in 2003. Currently, there are 45 active Master Wildlife Conservationists assisting the Wildlife Division.

The Division assisted 10 urban schools in Connecticut's five most populated cities in the creation of schoolyard wildlife gardens. Ten similar gardens were established in urban parks in Connecticut's 10 most populated cities.

The Wildlife Division continues to maintain a web site (www.dep.state.ct.us/burnatr/wildlife) that allows users to access a wealth of information about the state's wildlife. Fact sheets, publications, photos, black bear sighting reports and information about many of the Division's programs can be found there. New to the web site in 2003 were online applications for the deer and turkey season state land lotteries and a database listing all of Connecticut's public hunting areas. The hunting area database gives a short description of access to each area, the types of hunting permitted and links to downloadable maps. The web site is regularly updated with information about wildlife programs and new publications.

The Wildlife Division set up informational exhibits at several public events, including the Woodstock Fair, the annual Fishing and Hunting Expo, Sharon Audubon events and Connecticut Audubon's annual Eagle Festival in Essex. Division staff and Master Wildlife Conservationist volunteers interacted with thousands of people at these events, and Division staff members gave wildlife presentations at the Eagle Festival.

Division staff gave numerous presentations at professional meetings and conferences, hunting seminars, conservation organization and town meetings, inland wetland commissioners' training, the Ruffed Grouse Society's Coverts Program, teacher workshops, school classrooms, college classes, scout meetings and other events. Topics included bears, coyotes, bats, backyard wildlife habitat enhancement, mosquito management, endangered species, reptiles and amphibians, deer and wild turkey management, habitat enhancement using native plants and habitat management. Biologists also gave numerous media interviews on such topics as bears, coyotes, moose, shorebirds, bats, bald eagles and reptiles and amphibians.



L. ROGERS-CASTRO

Wildlife Division technician Laurie Fortin assists in the summer roundup of resident Canada geese that were banded as part of a four-year research project.

A booklet was completed summarizing the history and status of moose populations in Connecticut.

The 322 volunteer Conservation Education/Firearms Safety (CE/FS) instructors donated 13,554 hours of service to the CE/FS Program. A total of 3,857 students graduated from 166 courses in firearms (98), bowhunting (61) and trapping (7). A home study version of the CE/FS firearms course was developed and implemented to provide an alternative for students who are unable to attend the traditional classroom course. Nine home study courses were given with 92 graduates.

A hunter education public service announcement and outreach effort was initiated in the fall of 2003 to publicize Connecticut's highly-regarded hunter safety program.

The Wetlands Habitat and Mosquito Management Program held a meeting for recertification credits and training for Connecticut commercial pest control applicators.

Sessions Woods Education Center

Sessions Woods was the site of several scheduled public education programs, school field trips, youth group campouts, field trips and presentations for numerous private groups and meeting and training sessions for DEP staff. The facility also was the site for Master Wildlife Conservationist training. Numerous visitors used the interpretive trails at Sessions Woods.

The Division's Wildlife Outreach Unit continued to make progress on the development of five new exhibits on habitat and endangered species that will be housed in the exhibit room in the Conservation Education Center. A colorful, interactive exhibit on Connecticut's changing landscape has been completed, an exhibit on grassland and shrubland habitat is close to completion and the development of one on forest habitat is moving along.

The Friends of Sessions Woods published a guidebook of Sessions Woods with a grant from the James R. Parker Trust. This nonprofit group continues to make significant contributions to programs, projects and activities at the facility. One family event sponsored by the Friends of Sessions Woods was "Halloween in September," which attracted at least 100 participants. Kids and parents participated in various Halloween crafts and activities, while also learning about the importance of spiders and bats. The Friends also purchased various hands-on materials for use in the classroom currently under development in the exhibit area at the Sessions Woods Conservation Education Center.

Current Legal Status of the Mute Swan

Written by Min T. Huang, Migratory Gamebird Program

There has been much recent confusion about the legal status of the exotic mute swan. Unfounded rumors about hunting seasons and absolute protection have been bantered about in the media over the past few months. This article should clarify the current legal status of mute swans in the United States and in Connecticut.

The mute swan is an exotic species originally from Europe and Asia. It was brought to the United States as an ornamental species in the late 1800s and early 1900s. Mute swans were first established in Connecticut in the mid-1950s. Since then, their population in Connecticut, as indexed by the annual Audubon Christmas Bird Count, has grown to over 1,800. In Connecticut, all species of swans, including the exotic mutes, were afforded blanket protection from hunting in 1955 with the enactment of Section 26-94 of the Connecticut General Statutes, which prohibits the hunting of swans in Connecticut.

Prior to 2001, mute swans had varying legal status in other states. Many states regarded them as unprotected exotic species and removed them whenever possible.

Other states afforded them relative protection. On December 28, 2001, the nationwide legal status of the mute swan changed. The U.S. District Court for the District of Columbia, in the case of *Hill v. Norton*, ruled that the mute swan should be included under the Migratory Bird Treaty Act of 1918 (MBTA). This court ruling placed the regulatory responsibility for mute swans upon the U.S. Fish and Wildlife Service (USFWS).

Thus, based upon the ruling in *Hill v. Norton*, the legal status of mute swans is quite clear. Mute swans are classified as a species under the MBTA, and, as such,

the USFWS regulates swans and is responsible for their management. However, much confusion and legal wrangling abounds as to how the USFWS will manage mute swans.

After the decision in *Hill v. Norton*, all prior management activities that individual states had conducted now require a federal permit. States that had previously removed mute swans whenever possible are now required to obtain a federal permit to conduct those activities. Based upon the proven detrimental nature of mute swans (habitat destruction, negative impacts on native plants and animals) and the new court ruling, the USFWS determined that there were several courses of action that could be pursued:

1. Development of management plans for the mute swan in cooperation with state agencies and the flyway councils.
2. Establishment of hunting season frameworks for mute swans in cooperation with state agencies and the flyway councils [as a “swan” and a member of the Anatidae, the mute swan is automati-

cally a “game bird” as defined in the MBTA and the conventions].

3. Issuance of depredation permits to state agencies and others allowing the take of depredating mute swans (swans causing damage).

4. Establishment of a depredation order allowing state agencies and others to take depredating mute swans without need of a federal permit.

In 2002, the USFWS began issuing depredation permits to individual states and private citizens to lethally remove adult swans and to shake eggs. This was immediately met with a lawsuit, challenging the issuance of such permits. In response to this lawsuit, the USFWS promptly developed an Environmental Assessment for the Management of Mute Swans in the Atlantic Flyway (EA). After a 15-day comment period, a Finding of No Significant Impact (FONSI) was made and the document was finalized in July 2003. The issuance of a FONSI relieved the USFWS from the much larger burden of developing an Environmental Impact Statement for the management of mute

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An exotic species, the mute swan was first established in Connecticut in the mid-1950s. Since then, the population in Connecticut, as indexed by the annual Audubon Christmas Bird Count, has grown to over 1,800.

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P. J. FUSCO

Winter Wanderers - The Crossbills

Written by Paul Fusco, Wildlife Outreach Unit

Visible from a distance, the undulating flight pattern of red crossbills in a loosely formed flock clues us in to their identity. The birds in the roaming flock announce their presence with a constant chattering of call notes as they circle the top of a conifer tree before coming in to land. The loud *jip, jip, jip* emanating from the flock will gradually die down as the birds melt into the tree to begin feeding. After feeding quietly for a few minutes, one, then two, start to call, followed by more, until the entire flock joins in and then quickly bursts into the air, on its way to the next cone-bearing tree.

Crossbills are unique members of the finch family. They have a large-headed, chunky appearance and a short tail. But, their most distinguishing feature is their large, thick bill with mandibles that are crossed at the tips. There are two species that occur in Connecticut, the red crossbill and the white-winged crossbill.

The male red crossbill is brick-red in color, while the female is yellowish green. The white-winged crossbill male is pinkish-red with two white wing bars on its black wings. The female is yellowish green and sports the same white wing bars.

The main food source of crossbills is the seeds found within the ripened cones of conifer trees, including pine, spruce, fir, hemlock and larch. Crossbills will also eat the seeds of birches, alder, poplar and maple, along with berries and insects when available. Both species are known to be attracted to salt from moose licks or along the sides of roads.

With the oddly shaped bill of a crossbill, one might wonder how these birds can possibly feed? In fact, their bills are so highly specialized that they can extract the seeds from deep within a pine cone with ease. They are able to do this by using their bill as a forceps to rip into and force apart the scales of a cone while they use their tongue to remove the seed.

Habitat and Range

Northern coniferous and mixed forests are the primary habitats of crossbills. The normal breeding range of both species follows the boreal forest belt that extends across mid- to southern Canada and the extreme northern United States in the east, and up into Alaska in the west. The range of the white-winged crossbill extends farther north than the red, while red crossbills may be found in mountain terrain farther south. In fact, the normal breeding range of red crossbills reaches south into the mountains of central Mexico.

Breeding in Connecticut

Crossbills are considered to be irruptive species that occur in Connecticut as erratic migrants or wintering birds. While Connecticut is not within the normal breeding range



Red crossbills can be seen feeding with acrobatic maneuvers as they get themselves into position to extract the seeds from cones.

of either the white-winged or the red crossbill, there is one record of possible nesting by white-winged crossbills from 1986. That record was in the area of Pachaug State Forest in Voluntown and, although evidence indicated that nesting was highly likely, the report went unconfirmed.

Erratic Movements

In most winters, crossbills do not move far from their breeding range. In years of failed cone seed crops, they are erratic nomads, and flocks can occur as far south as the southern states. Their movements are based on the abundance of their primary food source, cones with seeds. Crossbills are so tied to good cone crops that they may breed in the middle of winter at a location that has a plentiful food supply.

Irruptions are periodic movements that occur every few years, bringing larger than normal numbers of crossbills and other northern birds into Connecticut and points farther south

in their search for food. Typically, these irruptions happen when there is a shortage of one or more of their normal foods. The irruptions can be intensified if the food shortage coincides with bird populations that are high. When conditions are right for irruptions to occur, large numbers of crossbills are forced to move far south of their normal winter range, wandering over broad areas before settling into a location where they find a reliable food source.

Parrots of the North?

Crossbills exhibit some interesting and entertaining behavior, especially while they are feeding. Their habit of walking along branches, using both bills and feet to maneuver around obstacles, may be compared to the behavior of parrots. Crossbills can be seen hanging in all sorts of contorted positions while they pry into cones to get at the seeds within. They are perfectly at home as they swing upside down or dangle by one foot while they reach from one cone to the next.

The Red Crossbill Species

Many ornithologists agree that the red crossbill species should be split into several separate species based on distinct vocalizations, morphology and lack of interbreeding in areas where more than one type is found. There are seven recognized types of red crossbills, four of which occur in the Northeast.

Each of the types have consistent differences in average body size, bill size and structure, vocalizations and habitat associations. Red crossbill types with larger bills are associated with stronger, harder coned pines than those with smaller bills, which are more closely associated with weaker coned trees, such as hemlock and spruce.

Separation of red crossbill types in the field is difficult due to the similarity of the visual characteristics between the types. Rather, identification is best done by comparing vocalizations. Each type has a different profile of vocal characteristics. The



The females of both the red crossbill (above) and white-winged crossbill have yellowish green plumage.

combinations of tonality and duration given in flight calls, toop (excitement) calls and alarm calls are diagnostic to identification. Other factors that may be considered when attempting identification include favored habitat type and the tree species being used as a food source.



White wing bars distinguish both sexes of the white-winged crossbill from the red crossbill.

Historic Tadpoles Provide Insight in the Future of Connecticut Amphibians

Written by Twan Leenders & Greg Watkins-Colwell, Division of Vertebrate Zoology, Yale Peabody Museum of Natural History, New Haven

The relatively sudden awareness that amphibian populations are declining on a global scale has caused biologists and policymakers worldwide to re-examine the current status of local amphibian populations. It is becoming increasingly clear that the absence of historic survey data precludes a rapid assessment of the problem. In Connecticut, programs such as the Connecticut Amphibian Monitoring Program (CAMP) are attempting to provide a baseline for future amphibian population surveys by systematically surveying selected field sites. However, a wealth of information on the status of amphibian populations in times past can be found in other places than the wetlands of Connecticut.

Amphibian larvae (including salamander larvae and the tadpoles of frogs and toads) are often neglected in surveys. However, most larvae can actually be reliably identified and provide, at the very least, presence/absence data for certain species in an area. Since tadpoles are often much easier to observe than the secretive adults,



TWAN LEENDERS (2)

Income tax checkoff funding has supported a study of larval samples in the herpetology collection of the Yale Peabody Museum of Natural History. Samples included the state-threatened northern spring salamander.



The findings of this study will enable researchers to understand where amphibians, like the state-endangered spadefoot toad, historically occurred and where they may still exist.

Historic collections of amphibian larvae present in natural history museums may be of great value to current amphibian researchers, as they may provide useful data on amphibian populations in historic times. Dissimilar survey designs and survey techniques may not permit direct comparison between historic and contemporary data sets, but historic records may serve as an important indicator of previous geographic distribution ranges, and may reveal remnants of populations long forgotten. Larval amphibians (sala-

mander larvae and the tadpoles of frogs and toads) are often neglected in surveys. However, most larvae can actually be reliably identified and provide, at the very least, presence/absence data for certain species in an area. Since tadpoles are often much easier to observe than the secretive adults,

they are great study subjects and excellent indicators of the health of an amphibian population's biological health. Between January and October 2003, researchers from the Yale Peabody Museum of Natural History have been studying the larval samples in the herpetology collection of the museum, a research project made possible through support of the Connecticut DEP and the Endangered Species/Wildlife Income Tax Checkoff Fund. The findings of this study allow us to see where Connecticut amphibians used to occur and, by superimposing these findings on the map of current amphibian distribution, we can locate areas and species that warrant a closer look. Some of the specimens included in the study date back as far as the 1870s and include such species as the Eastern spadefoot toad, that are now exceedingly rare and endangered in Connecticut.

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Loss of habitat has been one of the primary causes of amphibian decline in developing areas of Connecticut and it has become clear that this is not just a problem of recent years. It has seriously affected the decline of the Eastern spadefoot toad in Connecticut at least since the beginning of the 20th century. In a 1936 paper, Yale faculty member Stanley C. Ball mentions surveying areas in Fair Haven and the Prospect Street area in New Haven in the hope of rediscovering ponds that reputedly contained spadefoot toads in 1879. His intensive search did not reveal any trace of this species in this meanwhile heavily-developed section of New Haven. Ironically, approximately 60 years later, Stanley Ball's attempt to rediscover historical populations of the Eastern spadefoot toad needs to be replicated in order to assess the status of the populations examined by Stanley Ball himself. During the 1930s, Ball studied a population of spadefoot toads in Ansonia and released several individuals on his farm in North Plain. Unfortunately, his descriptions of the exact whereabouts of these populations were too vague to determine exactly where these animals used to live and no recent sightings from these areas have been reported.

The research on the historic Peabody collection was not limited to preserved museum specimens only. In the course of the study, old field notes of previous researchers, historic maps of target areas, old property deeds and other historic documents were located and analyzed to pinpoint the exact historic location of some populations. Comparison of old maps -- some almost 150 years old -- and recent

satellite images allowed us to document changes in the landscape where the populations used to be and produce a complete picture of the changes over time, possibly explaining the demise of these populations. Currently, several sites have been earmarked for a more personal approach and future surveys and fieldwork will have to establish whether these species are still there or not.

Of course, finding an uncommon amphibian species in a historic site is the ultimate reward for the detective work. Yet, this is not always that easy. Especially in the case of the secretive spadefoot toad, which spends most of its adult life underground; it will be extremely difficult to encounter an adult anywhere in the state. However, it only takes a single tadpole in a pond somewhere to get the message across.

Endangered Species Profile: *Eastern Spadefoot Toad*

The eastern spadefoot toad is probably the rarest and most secretive amphibian found in Connecticut. It has been the subject of myths claiming that it remains buried for years underground in shallow burrows before surfacing to breed. Spadefoots do remain underground in shallow burrows for weeks during dry periods. Because of this habit and the toads' nocturnal nature, spadefoots are difficult to find and seldom encountered other than during brief, unpredictable breeding events after heavy rains.

Spadefoot toads are "explosive breeders," appearing suddenly, sometimes in great numbers, after heavy rains that occur during the warm months. This is usually a one-night phenomenon, although the toads can breed several times at the same site from April to July. There is no regular, annual migration to the breeding pools. Instead, a quick drop in barometric pressure, more than two inches of rainfall and darkness, all happening at once, trigger the spadefoots to emerge from their burrows and go to nearby, temporary pools. When rainfall is extensive, their call, a short explosive "wank," like the call of a crow, may be heard.

Identification

Eastern spadefoot toads are plump, with smooth skin and scattered, tiny warts. They range in color from olive to brown or black. Two irregular yellow stripes on the back may form a vase-shaped pattern or resemble the outline of



a misshapen hourglass. Unlike most frogs and toads in North America, which have round or horizontal pupils, spadefoot toads have almost vertical pupils. Spadefoots can also be distinguished from other toads by a black, sharp-edged, spade-like projection on the underside of each foot. By rocking back and forth and rapidly digging, using the projections on its hind legs, the toad can vanish quickly below the surface of loose soil.

Interesting Facts

Spadefoot eggs are laid underwater and deposited in strings, which are typically attached to a twig, grass blade, fern leaf or some other type of vegetation. The male fertilizes the small, dark eggs as the female lays them. A female may lay up to 2,500 eggs, which hatch in one to seven days. The tadpoles grow quickly, transforming into toads in 16 to 20 days for late-season broods and 48 to 63 days for early-season broods.

During periods of extended drought, eastern spadefoot toads can lie dormant. They curl into a tight ball and excrete a fluid that hardens the soil around them,

forming a compact chamber to retain any available moisture. When heavy rains soak the soil, the toads uncurl and resume their normal activities.

When handling spadefoot toads, many people experience strong allergic reactions to secretions from the toads' skin glands. Reactions may include violent sneezing, a runny nose and watery eyes. To prevent an allergic reaction, anyone who handles a spadefoot toad should wash their hands thoroughly with soap and water, keeping their hands away from their face and eyes until they do so.

Reason for Decline

Eastern spadefoot toads are listed as an endangered species in Connecticut. Only 16 sightings of spadefoots were reported from 1811 to 1936 in southern New England. The species was only seen eight times at various locations throughout the state from 1970 to 1989. Why are spadefoots so rare? For one, their population is threatened by the loss of habitat due to development and urbanization. The toads are also susceptible to high mortality when breeding pools dry up before the tadpoles can grow and transform into toads.

Conservation

The protection of vernal pools (pools of water that are generally present during spring, but may dry up during summer) and other temporary water bodies will help many of Connecticut's amphibian species. Pools located near sandy soils or dry, open areas are of particular importance to spadefoot toads. Learn to identify these special habitats so they can be noted and protected.



Rescued Bald Eagle Released at Shepaug Dam



P. J. FUSCO (2)

An immature bald eagle that underwent extensive rehabilitation from an injury is held by wildlife rehabilitator Dara Reid (left) before it was released back into the wild. The eagle (above) flew for a short distance and then landed near the bottom of the Shepaug Dam.

A young bald eagle with an injured wing was found in August 2002 near the banks of the Saugatuck River in Weston. It was hungry, in poor health and covered with lice. Fortunately, this same eagle was set free in early November 2003 at a favorite wintering spot for eagles, the Shepaug Dam in Southbury.

After being found, a DEP conservation officer brought the injured eagle to Wildlife in Crisis, a wildlife rehabilitation center in Weston. Once there, the bird received medical treatment and began the slow road to recovery, with the help of center director Dara Reid and several volunteers. While it usually takes several weeks to nurse injured raptors back to health, this particular eagle had suffered significant nerve damage to the left wing and needed a longer recovery time. To help the bird learn to fly again during its rehabilitation, the center built a big flight cage. Fifteen months later, it was felt that the eagle was healthy enough to return to the wild.

Dara Reid placed a leg band on the eagle to help in future identification and then set the bird free. It flew for a short distance and then landed near the bottom of the dam. Staff from Wildlife in Crisis plan to come to Shepaug Dam regularly to keep a lookout for the young eagle.

View Bald Eagles at Shepaug Eagle Observation Area

Shepaug Eagle Observation Area, in Southbury, will be open through March 17 on Wednesdays, Saturdays and Sundays, from 9:00 AM-1:00 PM. Reservations are required to view the eagles. Call 1-800-368-8954, on Tuesdays through Fridays, from 9:00 AM-3:00 PM, to make reservations.

Mute Swans,
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swans. The Proposed Action under the EA recommended the reduction of the Atlantic Flyway mute swan population by 67% within 10 years. The reduction would be accomplished through the issuance of depredation permits. Hunting was not considered an option in the Proposed Action.

Upon the release of the final EA, a lawsuit challenging the issuance of a depredation permit to the state of Maryland was brought by the Fund for

Animals. The lawsuit claimed that removal of mute swans from the Chesapeake Bay caused "irreparable harm" to the plaintiffs, by causing them "aesthetic injury." In a surprising opinion dated September 9, 2003, the court ruled in favor of the plaintiffs and issued a temporary injunction. The court decided that the plaintiffs had presented a compelling argument that removal of wild animals would cause irreparable aesthetic injury. Further, the court found that the USFWS had not fully followed their own procedures for the establishment of a FONSI. Given this court

decision, the USFWS is currently deciding what the next step will be.

Thus, the responsible, nationwide management of mute swans is currently on hold. This means that the mute swan population in the United States will continue to grow unabated until the current legal proceedings are concluded. Through all of this, the management of mute swans in Connecticut has not changed. The state has not actively managed swans in the past, and will not manage swans in the future until the USFWS decides how such management will be conducted.

Beavers in the News

Why relocation isn't the answer to beaver problems

Written by Laura Saucier, Habitat Management Program

There has been recent controversy in the news concerning measures taken to solve problems caused by beaver activity. One of the main topics in the debate is the DEP's policy to not allow the relocation of problem beavers. There are several reasons why this policy was established.

According to the Connecticut General Statutes section 26-57, "no person shall transport within the state or transport out of the state any wildlife (any fish, bird, quadruped, reptile or amphibian) for which a closed season is provided without a permit from the Commissioner of Connecticut Department of Environmental Protection (DEP)." Therefore, beavers cannot be relocated/transported without authorization from the Department. However, the Department has now adopted a strict "no relocation" policy because beavers are currently abundant and widely distributed in Connecticut and there is a large number of reported nuisance problems every year. Most of the approximately 200 beaver complaints received every year are related to public health and safety issues (flooding of wells, septic fields, roads, driveways, structures, etc.). The DEP also has addressed numerous complaints concerning damage to agricultural properties and several involving damage to the habitats of uncommon or endangered plants and animals.

Relocation was an important technique used in the 1950s to 1970s when beaver populations were low and biologists wanted to return beavers to their historical range. Today, relocation is no longer considered a viable option for alleviating a nuisance beaver problem. In heavily developed states, like Connecticut, where beaver populations are currently abundant and widely distributed, it is highly probable that this technique will create new problems at the relocation site.

Furthermore, suitable, unoccupied wetland habitats where beavers can be relocated are limited in Connecticut, and research has shown that relocated animals seldom stay in the area where they are released. Beavers that do remain at the relocation site will soon produce offspring. At two years of age, these offspring will disperse from the parent colony to find unoccupied habitats where they can establish a territory of their own and possibly cause more nuisance problems.

From an ecological perspective, there is value in having a landscape with a mosaic of wetland habitat types, such as forested wetlands, wet meadows, shrub/scrub swamps and emergent marshes, in different stages of succession--not just beaver marshes. Each of these wetland habitats supports its own unique diversity of wildlife.

Most importantly, relocating beavers does not reduce the population and, therefore, does not reduce the overall number of complaints and damage.

From an ecological perspective, there is value in having a landscape with a mosaic of wetland habitat types--not just beaver marshes.

For More Info:

To learn more about beavers, as well as about handling nuisance problems, request a beaver fact sheet and the booklet, "Beavers in Connecticut, Their Natural History and Management," from the Division's Sessions Woods office. These publications are also available at www.dep.state.ct.us/burnatr/wildlife/problem/bvrprob.htm.



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A family of beavers, or colony, typically consists of 2 adults and their 2-6 kits. Kits remain with the adults until they are forced out of the colony at 2 years of age and must find a territory of their own. Adult beavers are territorial and will not tolerate other beavers in their colony's home range.

P. J. FUSCO

Adaptive Harvest Management

What is it and how does it work?

Written by Min T. Huang, Migratory Gamebird Program

The process of setting duck hunting seasons in the United States is conducted annually. Since 1995-96, these seasons have been set using a process called Adaptive Harvest Management (AHM). The need for an “adaptive” approach to the setting of waterfowl hunting seasons arises because the consequences of hunting regulations on waterfowl populations cannot be predicted with certainty. Many factors, such as weather, constantly changing habitat conditions and hunter activity, play a role in the dynamics of duck populations. An adaptive approach to harvest management provides objectivity to the decision-making process in the face of this uncertainty. The great benefit of AHM is that it provides a scientifically sound platform for regulation setting and maintains a careful balance between hunting opportunity and long-term conservation of the waterfowl resource. It has also helped to minimize debate among managers when establishing annual regulations.

Currently, there are two separate AHM procedures. The Atlantic Flyway is regulated based on population models for Eastern mallards, whereas regulations for the western three flyways (Mississippi, Central and Pacific) are based on

population models for mid-continent mallards. This is an important distinction because many of the ducks harvested in the Atlantic Flyway come from areas in southern Ontario and Quebec and from the states along the eastern seaboard, not the mid-continent region.

In general, AHM consists of a number of key components: (1) a set of population models that predicts the effects of harvest and environmental factors on duck abundance, (2) a measure of reliability with each population model, (3) an overall harvest objective and (4) a limited set of hunting season packages, or regulatory alternatives.

Currently, there are four separate regulatory alternatives for the Atlantic Flyway. These are a closed season alternative, a restrictive season, a moderate season and a liberal season. The season lengths and total duck bag limits differ between these four alternatives. Each hunting season package reflects an estimation of the total mallard harvest rate that could be expected given that particular alternative. For instance, with the liberal season package (60-day duck hunting season, with a 4-mallard limit and 6-duck total bag limit), a mallard harvest

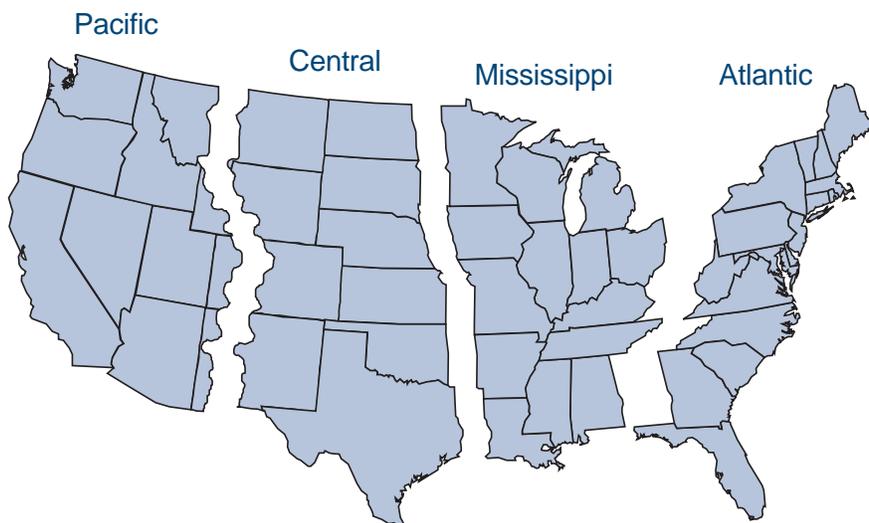
rate of approximately 17% (the percent of the population that is taken due to hunting) is expected. In a restrictive season (30-day season, with a 3-mallard limit and 3-duck total bag limit), a mallard harvest rate of approximately 13% would be expected. One might be surprised that such large differences in opportunity arise from relatively small differences in harvest rate.

The optimal regulatory alternative (hunting season package) for the upcoming hunting season is chosen annually based upon the size of the breeding population each spring. The breeding population for Eastern mallards is defined as the southern portions of Ontario and Quebec and the northeastern states from Virginia to Maine. In the Atlantic Flyway, with the current set of population models, the optimal regulatory alternative is a liberal season whenever the mallard breeding population is greater than 275,000. Once the regulatory alternative is chosen, each individual state then sets the state’s duck hunting seasons within the general guidelines, or framework, of that particular regulatory alternative.

Current Eastern mallard AHM population models incorporate data on population size, reproductive output and survival estimates to predict the spring breeding population after the hunting season. Each model output (predicted population size) is compared with the observed population the following spring. Models that do a better job of predicting the population are given greater emphasis (weight) than those that were not as accurate. Thus, biologists are able to annually assess the performance of each population model and update the ‘reliability’ of each model. In essence, with each year and the repeating of the process, new knowledge is gained about how the population responds to various factors.

Since its inception, there have been a number of changes to the AHM process and, currently, biologists are at a crossroads with regards to the future direction of the AHM process. All stakeholders (i.e., hunters, waterfowl

Migratory Bird Flyways



managers, conservation groups) concerned about waterfowl and their habitats are in general agreement that adaptive management is the future of duck harvest management. What direction that future takes is the question that lies before us now.

The current AHM protocol is based solely upon the population status of mallards. In the Atlantic Flyway, however, there are other duck species, such as black ducks and wood ducks, that have great value, both to hunters and resource managers. Does the current protocol adequately address the long-term conservation and recreational opportunity of these species? Perhaps duck harvest regulations in the Atlantic Flyway should be more closely tied to the status of these other species rather than mallards? How does the current protocol address the long-term conservation of other duck species, such as northern pintail or canvasback? Consideration of stocks other than mallards is central to the future of AHM.

Another issue that needs to be addressed for the future direction of AHM is the overall objective of waterfowl hunting seasons. The current objective of AHM is to maximize harvest opportunity while maintaining the long-term viability of duck populations. However, is this the appropriate goal of AHM? Perhaps some measure of hunter satisfaction should be incorporated into the overall objective. What, however, makes for a satisfied waterfowl hunter? For some, it is surely a full limit of ducks. For others, it may be seeing a lot of ducks, seeing few other hunters or some other variable. The continued tradition of waterfowl hunting is reliant upon the recruitment and retention of dedicated, ethical hunters. If possible, the regulation setting process should incorporate some measure of hunter satisfaction. The general assumption that maximizing waterfowl harvest opportunity makes for content waterfowl hunters may not be true. An assessment of the relationship between hunting regulations and hunter participation and satisfaction may be on the horizon. This work could help managers develop the appropriate balance between harvest regulations, waterfowl abundance and hunter satisfaction.



The current Adaptive Harvest Management protocol is based solely upon the population status of mallards.

The challenges that face the continued evolution and long-term acceptance of AHM are both technical and philosophical. On the technical side, how do we better incorporate other species, such as black ducks and wood ducks, into the process? This is a complex issue and will take time to resolve. From a philosophical standpoint, how big a role should social considerations play in the setting

of waterfowl hunting seasons? This question too, will take time to resolve. In the interim, we should rest assured that we are operating under a system that is a vast improvement over the various processes that preceded it, and that will ensure the long-term conservation of our waterfowl resources.



In the Atlantic Flyway, consideration of the status of other waterfowl species, like wood ducks (above) and black ducks, is central to the future of Adaptive Harvest Management.

Just for Kids

Winter Wildlife Surveys

Hibernating Bats

Wildlife biologists look for bats in winter in their *hibernacula* (places where animals hibernate). The Indiana bat, an endangered animal, was recently rediscovered in Connecticut during a hibernacula survey.

Midwinter Bird Counts

Eagles, ducks, geese and swans are counted each year in winter. Frozen lakes and ponds force the birds to travel to open water. Then, biologists can go to open water areas to count the birds. These counts are compared from year to year to see if there are changes in the numbers of birds over time.

Finding Deer from the Air

Biologists count deer while flying overhead in an airplane. When the leaves are off the trees and snow is on the ground, the deer are easier to see.



P. J. FUSCO

Telemetry

Winter is the perfect time for wildlife biologists to view bears in their den. By using radiocollars with transmitters, biologists can find the bears and see if they have had any cubs.

Snowtracking

Some animals are very secretive but leave signs that they have been around. Wildlife biologists look for bobcats and fishers in winter by finding their tracks in the snow.

How many deer can you see here?

(answer on next page)

The Wildlife Observer



Do you have an interesting wildlife observation to report to the Wildlife Division?

Talking Turkey

The following wildlife observation was submitted by reader Elsie Snell from Moodus:

"I was sitting on the deck enjoying a little sun between household chores. A strange low cluck came from the edge of the woods but my view was partially blocked by a gas grill. I practiced a cluck and the sound echoed back from the edge of the woods. Peering around the grill, I couldn't see anything but the cluck was heard again. Now, becoming more proficient at my new found talent and staying concealed behind the grill, I kept returning clucks. After a few minutes, the clucking came closer and I could see a large turkey headed toward the deck. The thought came to me, "Whatever am I going to do with it when it gets here?" When the turkey appeared within about 10 feet of me and saw that I was not another turkey, it went hightailing off into the woods, squawking all the way. A week later a hen came back with about a dozen poults and they paraded around the back lawn. I think she was telling me she was spoken for."

Please send it (and any photos) to:

Wildlife Observations
DEP - Wildlife Division
P.O. Box 1550
Burlington, CT 06013

Email:
katherine.herz@po.state.ct.us

(submitted photos will be returned at your request)

Wildlife Calendar Reminders

- Dec. 27-Mar. 17 **Shepaug Bald Eagle Viewing Area** is open for the 2003-2004 eagle viewing season. The observation area will be open three days a week--by advance reservation only--on Wednesdays, Saturdays and Sundays. Call 1-800-368-8954, Tuesday through Friday, from 9:00 AM-3:00 PM, to make reservations.
- January Donate to the Endangered Species/Wildlife Income Tax Checkoff Fund on your 2003 Connecticut Income Tax form.
..... Spring turkey hunting and state land deer lottery applications available at town halls and Wildlife Division offices.
- Jan.1-31 Extended archery deer season on private land in zones 11 and 12. A 2004 deer permit and private land consent forms dated for 2004 are needed.
- Jan.15-Feb. 15 Special late Canada goose hunting season in the south zone only. For more details, consult the 2003-2004 Migratory Bird Hunting Guide, available at town halls and DEP offices. The guide can also be found on the DEP's web site at: www.dep.state.ct.us.
- Feb. 10 State land lottery deadline for spring turkey hunting season.
- Feb. 12-15 Visit the exhibit sponsored by the DEP's Bureau of Natural Resources and the Division of Law Enforcement at the **6th Annual Fishing and Hunting Expo**, at the Connecticut Expo Center in Hartford. For more information on the Fishing and Hunting Expo, visit the web site for North East Promotions, www.fishingandhuntingexpo.com.
- Feb. 14-15 **5th Annual Connecticut River Eagle Festival** in Essex. For more information, visit Connecticut Audubon's web site at: www.ctaudubon.org.
- Feb. 28 Send in permit-required (small game) season survey cards.
- Early March Clean out bluebird nest boxes and install new ones.
- March 15 State land lottery deadline for deer hunting season.

QUIZ ANSWER

There are nine deer in the photo.

Connecticut Wildlife

Subscription Order

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Connecticut Wildlife, P.O. Box 1550, Burlington, CT 06013

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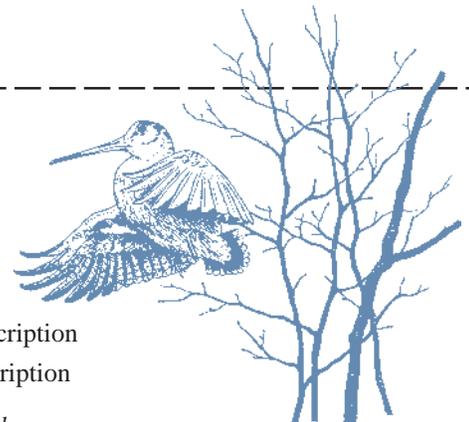
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The Wildlife Division continued a research project on black bears in which bears were live-trapped and administered immobilizing drugs so that staff could collect data on each bear and attach identifying ear tags. Wildlife Division biologist Paul Rego is pictured with one of 21 bears that were captured in 2003.

Bureau of Natural Resources / Wildlife Division
Connecticut Department of Environmental Protection
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