

# CONNECTICUT STATE WILDLIFE GRANTS

## Taking Conservation into the Future

*“The State Wildlife Grant Program provides the greatest opportunity in the history of Connecticut for pro-active conservation.”*

– Gina McCarthy, Commissioner,  
Connecticut Department of Environmental Protection



Connecticut Department of Environmental Protection  
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# Taking Conservation into the Future

*"The wildlife and its habitat cannot speak. So we must and we will."*

– Theodore Roosevelt



P. J. FUSCO

*Since 2001, the State Wildlife Grants Program has provided funding for over 50 projects that have greatly benefitted knowledge of the distribution and abundance of wildlife species of greatest conservation need (GCN) in Connecticut and the factors limiting their populations. The American black duck, which is considered a very important GCN species, is currently the focus of a project studying habitat use, carrying capacity, and winter survival.*

#### Cover:

*In 2006, the Connecticut DEP started a Grassland Habitat Initiative as the first major statewide conservation action to be addressed under the state's Comprehensive Wildlife Conservation Plan. With the help of funding provided by the State Wildlife Grants Program, efforts were undertaken to identify the locations and quality of existing warm-season grasslands that provide important habitat for upland sandpipers and other grassland birds. See page 4 for more detailed information.*

*Front and back cover photos: Paul J. Fusco*

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**P**resident Theodore Roosevelt and other early conservationists recognized the need and initiated efforts in the early 1900s to protect the nation's diminishing natural heritage. Since then, most efforts have focused on restoring or enhancing game species, and there have been many success stories. In Connecticut, the Department of Environmental Protection (DEP), through its Wildlife and Fisheries Divisions, initiated successful restorations of game species, such as wild turkey, striped bass, and fisher. These and other efforts were made possible through funds derived from the sale of fishing and hunting licenses and the payment of federal excise taxes by hunters and anglers on hunting and fishing equipment.

As the field of wildlife conservation evolved, efforts by state and federal agencies were expanded beginning in the 1960s and 1970s to protect nongame wildlife. Because funding was minimal in most states and at the federal level, most of this work has been focused on endangered and threatened species. Despite these constraints, Connecticut has had several success stories for nongame species, such as the recovery of the osprey, eastern bluebird, and bald eagle.

In 2001, the U.S. Congress, acting in response to the states' need for comprehensive conservation for all of America's wildlife, approved the Wildlife Conservation and Restoration Act Program that subsequently led to the establishment of the State Wildlife Grants (SWG) Program. The SWG Program provides federal grants to all states to benefit wildlife and their habitats, with the goal of preventing species from becoming endangered. Funds are appropriated annually and must be used for projects that improve the conservation of species identified as those of Greatest Conservation Need (GCN) within



*New England and eastern cottontails were equipped with radio collars and followed with the use of radio telemetry antennas. This State Wildlife Grant funded study provided data on movements, survival, and habitat use of the two rabbit species.*

a state's Comprehensive Wildlife Conservation Strategy (CWCS), also known as a state's Wildlife Action Plan. Connecticut's CWCS, which was completed in 2005, was the culmination of a comprehensive two-year planning effort that included input from a variety of species experts, conservation groups, and other stakeholders. The CWCS guides the projects for GCN species that are funded through the SWG Program. This summary describes a sample of projects that were made possible through SWG funds. These

projects have greatly benefitted knowledge of the distribution and abundance of GCN species in Connecticut and the factors limiting their populations. This information is critical to future conservation efforts.

## Assessing the Distribution and Abundance of New England Cottontails

The New England cottontail (NEC) is the only native rabbit species found in Connecticut. Limited research over the past 50 years suggests that the distribution and abundance of NECs have declined in Connecticut and elsewhere. In 2006, the U.S. Fish and Wildlife Service designated the NEC as a candidate for threatened or endangered status under the federal Endangered Species Act.

Starting in 2002, State Wildlife Grant funds have been used to help determine the status of NECs in Connecticut. NEC distribution was assessed by collecting rabbit specimens from live-trapping efforts, hunter harvest, and roadkills. Data on movements, survival, and habitat use of NECs and eastern cottontails (a similar



*The New England cottontail is the only native rabbit species found in Connecticut. The distribution and abundance of this rabbit have declined in Connecticut and elsewhere.*

and more abundant non-native rabbit) were collected through radio-telemetry studies. Rabbit specimens were identified as NECs or eastern cottontails (EC) by examining skull morphology or conducting DNA analyses. This study documented the occurrence of NECs in several new locations. Distribution data indicate that NECs are well-established in southwest Connecticut and the western third of the state.

Movements, survival, and habitat use of NECs and ECs equipped with radio-collars were monitored at four locations in eastern Connecticut. These studies indicated that creating large patches of dense cover is critical to maximizing winter survival of NECs.

### Grassland Habitat Initiative

Grasslands are one of the top priority habitats recognized by Connecticut's CWCS. They provide habitat for approximately 80 bird species in the state (13 of which are on Connecticut's Threatened and Endan-



*Connecticut's Grassland Habitat Initiative has led to the identification of several new breeding and nesting locations for some of Connecticut's most threatened and endangered bird species, including the grasshopper sparrow.*

gered Species List), as well as for several mammals, reptiles, amphibians, and rare invertebrate species. Grassland habitat is in serious decline statewide, especially in the Connecticut River Valley, from the Hartford area north into Massachusetts, where most of the prime warm-season grassland habitat is located. In 2006, in light of this compelling

by the SWG Program, efforts to identify the locations and quality of existing warm-season grasslands and lands suitable for grassland creation began in 2006. A model was developed to screen potential warm-season grasslands statewide and 800 sites were identified. Three field seasons later, all 800 sites have been visited and a quality assessment based

need, the DEP implemented a Grassland Habitat Initiative as the first major statewide conservation action to be addressed under the CWCS.

To guide the direction of the initiative, a committee consisting of representatives from the DEP, other state agencies, the agricultural community, and numerous non-governmental organizations was formed. The committee was charged with reviewing existing data, identifying research needs, and establishing conservation goals. By including all stakeholders in the decision-making process, this initiative has garnered wide-reaching support.

With funding provided

P. J. FUSCO (2)



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on current land use, wildlife observations, and proximity to other known grasslands has been completed.

Because grassland birds are easily detected during field surveys, avian species were selected as a primary indicator of current grassland condition. The data collected during site visits included bird species present, bird behavior, land cover, land use, and the condition of surrounding areas. These efforts have led to the identification of several new breeding and nesting locations for some of Connecticut's most threatened and endangered bird species, including the horned lark, eastern meadowlark, and American kestrel.

A major milestone in the Grassland Habitat Initiative was reached when a large parcel identified through this SWG project as a high-quality grassland site was acquired in 2008. In November, Connecticut Governor M. Jodi Rell and Massachusetts Governor Deval Patrick announced the preservation of approximately 450 acres of grassland straddling the Connecticut and Massachusetts border. The property will be managed jointly by the two states as habitat for a variety of grassland species, like upland sandpipers, grasshopper sparrows, bobolinks, and savannah sparrows. Protection of this large block of grassland habitat helps both states accomplish major conservation actions identified in their state CWCS.

## Researching Native Bee Pollinators

The need for information on native pollinators is urgent. Fruit growers and scientists alike are reporting rapid and serious declines in pollinators nationwide. In Connecticut, wild honeybee hives, common in the state just two decades ago, are disappearing. Dependence on managed hives is increasing and many fruit growers believe yields are limited due to the lack of managed hives.

Many eastern bee species are declining rapidly. The large, familiar bumblebee, which was common less than a decade ago, is now rare. There is growing concern that a number of North American bumblebee species are sliding toward global extinction. In an effort to address these serious and immediate conservation challenges, a tremendous amount of data on Connecticut bees has been collected and evaluated during 2007-2009 through a SWG-funded collaborative project with



*Many eastern bee species are declining rapidly. The large, familiar bumblebee, which was common less than a decade ago, is now rare.* PHOTO BY J. S. ASCHER

the University of Connecticut. To date, over 6,900 records of individual bees have been entered into a statewide database. All occurrence data on bees, including GPS location coordinates, are entered into the American Museum of Natural History's Bee Database and are available at <https://research.amnh.org/pbi/locality/>. The records are also uploaded on a regular basis to Discover Life (<http://www.discoverlife.org/>), where they can be mapped and the records can contribute information for regional and national pollinator conservation efforts.

As a result of the inventory and assessment project, four bees have been proposed for state listing (1 endangered and 3 special concern species). Unfortunately, the three special concern species are thought to be extirpated from the state, and it may be too late to take action on their behalf. When the listing update is finalized in 2009, Connecticut will become the first eastern state in North America to provide legal protection for its bee pollinators through the state's Endangered and Threatened Species Act. Conserving native pollinators that are experiencing seri-



*In the springs of 2005-2007, 98 breeding male woodcock were captured at five study areas and equipped with radio transmitters. Data were collected on the movements and survival of the birds.*

PHOTO BY M. HUANG

ous declines is important to both the biodiversity of Connecticut and the state's economy.

## Habitat Use and Survival of American Woodcock

American woodcock populations have experienced a long-term decline throughout North America, primarily due to loss of suitable habitat. This project assessed habitat use by woodcock in high quality and lower quality areas and estimated survival rates within those habitats.

In the springs of 2005-2007, 98 breeding male woodcock were captured at five study areas and equipped with radio transmitters. Over the three-year period, it was found that habitat quality and quantity are largely governing survival rates of male woodcock in Connecticut. Woodcock in the state primarily seem to be using forest stands that are more mature than what previous research has found. Results indicate that woodcock habitats containing fewer, larger-sized openings result in higher survival rates for birds than those habitats containing more smaller-sized openings. Project results will better aid future land management for woodcock.

## Habitat Use, Carrying Capacity, and Survival of Wintering Black Ducks

The American black duck has been identified as a very important GCN species in Connecticut. One poorly understood aspect of the black duck's biology is how wintering condition affects survival and production. Winter condition is largely governed by the amount of food resources available throughout winter. Loss of coastal wetlands in Connecticut and along the Atlantic Coast has been detrimental to wintering black ducks. If black ducks preferentially select certain habitats, it is critical to understand why.

The objective of this SWG project is to determine winter habitat use, hen survival rates, time and energy budgets, and food availability of black ducks in Connecticut. The collection of these critical data will serve as the framework for long-term conservation and management efforts in the state.

In the winters of 2008-2009, black ducks were captured along the coast and equipped with radio transmitters. Samples of available



*The SWG Program has provided funding for a project to determine habitat use, carrying capacity, and winter survival of black ducks in Connecticut. The project involved the use of radio transmitters to track movements and survival of the ducks.*

food resources were also collected. When this study is completed, wildlife biologists will be able to determine whether wintering black ducks use all available habitat or whether human disturbance, development, or amount of open water on the marshes affect black duck use.

### Identification of Habitat Characteristics of Horseshoe Crab Spawning Beaches

The horseshoe crab is an excellent "keystone species" which can be used to gauge the overall health and integrity of shallow water and beach communities in Long Island Sound. For thousands of years, horseshoe crabs have gathered every spring to spawn on Connecticut's beaches. However, during recent decades, declines in their abundance have been reported along the Atlantic coast, including in Connecticut. The DEP has responded to this decline by establishing three limited areas that have been closed to harvest since 2007.

In 2008, the DEP and University of Connecticut initiated a SWG funded study to identify the habitat characteristics that determine the

selection of a spawning beach by horseshoe crabs and which beaches are the most critical spawning locations. Horseshoe crabs provide direct economic value by supporting a small



*In 2008, the DEP and University of Connecticut initiated a SWG funded study to identify the habitat characteristics that determine the selection of a spawning beach by horseshoe crabs and which beaches are the most critical spawning locations.* PHOTO BY P. HOWELL

bait fishery, and they are ecologically important to the Long Island Sound ecosystem.

Local abundance of spawning horseshoe crabs in Connecticut has been monitored by volunteers at up to 33 beach locations since 1999. This solely volunteer effort has provided valuable information on abundance levels at some spawning locations. However, this survey is not designed to detect long-term trends or determine the characteristics of the most successful spawning beaches. This new horseshoe crab project will provide necessary information for predictions about which areas, if protected and managed, would be most valuable to the long-term stability of Connecticut's population.

### Atlantic Sturgeon in Long Island Sound and Connecticut Waters

Atlantic sturgeon are large, long-lived anadromous fish (breed in freshwater, live in saltwater) that are native to large rivers along the East Coast of the United States. These prehistoric-looking fish can reach lengths of 12 feet, weights of several hundred pounds, and can live for 60 years or more. Although their residence in coastal waters along the entire East Coast can span decades, little is known of their coastal habitat preferences or movements. Despite being one of the largest of Connecticut's GCN fish species, there is a lack of information about the numbers or habits of Atlantic sturgeon in Connecticut. Stocks of native Atlantic sturgeon are currently believed to be extirpated in Connecticut rivers. However, Atlantic sturgeon have been collected in the lower Connecticut River every year since 1988.

Through SWG-funded research, the DEP Fisheries Division has identified prey items and documented the importance of polychaetes (worms) and callinid shrimp for sturgeon. Also, two areas in Long Island Sound have been identified as seasonal sturgeon concentration areas. Through the recapture of previously-tagged fish, movement of Atlantic sturgeon from New York, Maryland, Delaware, North Carolina, and as far away as Georgia to Connecticut has been documented. Ultrasonic telemetry work has helped in understanding movement patterns of these fish in Connecticut waters. Future efforts will allow important habitats to be mapped so that this GCN species can be better understood and protected.



Atlantic sturgeon are seasonally present in Long Island Sound and the lower sections of Connecticut rivers. In this photo, two externally applied t-bar tags can be seen on this sturgeon (small, yellow “threads”); one is above the left pectoral fin and one is below the dorsal fin. DEP staff examined, measured, weighed, and tagged this sturgeon before releasing it.

## Field Guide to Freshwater Mussels of Connecticut

Six of Connecticut's 12 species of native freshwater mussels are listed as state endangered, threatened, or special concern – a clear message that this species group is in trouble. Freshwater mussels are keystone species and good biological indicators of what is occurring in a river ecosystem. When mussels start to disappear from an area, it could be a signal that water quality has been degraded. Current threats to this species group include loss of habitat by damming and impounding rivers, dredging and channelization of streams, degradation of water quality, and the introduction of non-native species like the zebra mussel.

In 2001, the DEP Wildlife Division published “A Field Guide to the Freshwater Mussels of Connecticut.” This guide highlights life cycle information, identification tips, and searching techniques, and features color photographs of all the native Connecticut

freshwater mussel species.

In a classic example of “citizen science,” two amateur naturalists on a canoe trip on the Connecticut River during 2006 located an unusual mussel and, thinking that it was a unique find, took photographs of it. After their trip, they went to the DEP's website ([www.ct.gov/dep](http://www.ct.gov/dep)) and used “A Field Guide to the Freshwater Mussels of Connecticut” to identify it as a yellow lamp mussel, a species which had not been seen in Connecticut since 1961. Experts later verified the identification.

Information provided by those using the guide has expanded knowledge on the distribution of these species and aided the DEP in evaluating potential environmental impacts from development projects.

## Long Island Sound Wintering Waterbird Survey

Data are lacking on the distribution and habitat use of wintering waterbirds in Long Is-

land Sound (LIS). Funds from the SWG Program have allowed the DEP Wildlife Division to initiate a project to help fill this information gap. A combination of ground, aerial, and boat surveys was used to document the distribution and abundance of waterbirds in LIS during the winters of 2004-2006. Sixty-eight species were observed, including rarities like the Eurasian wigeon, king eider, red-necked grebe, northern gannet, and razorbill. The surveys demonstrated that LIS is a very important wintering and staging area for migratory waterbirds. An examination of diversity indices showed that the western part of LIS (Housatonic River west to Greenwich Harbor) supported the greatest diversity of species during the wintering period. The diversity of species was greatest in February and March, near the end of the wintering period, when the birds are preparing for spring migration to their breeding grounds.

Areas of high use were mapped and identified as “areas of importance” for



*A combination of ground, aerial, and boat surveys was used to document the distribution and abundance of waterbirds in Long Island Sound during the winters of 2004-2006. Sixty-eight species were observed, including the greater scaup (pictured above), and even rarities like the Eurasian wigeon, king eider, red-necked grebe, northern gannet, and razorbill.*

waterbirds. This information will help the DEP make wise conservation management decisions regarding any potential environmental impacts to Long Island Sound.

### **Eastern Spadefoot Toad and Blue-spotted Salamander Mapping and Inventory**

There is scarce information on the distribution, movements, and habitat requirements of eastern spadefoot toads and the diploid population of blue-spotted salamanders (diploid organisms have two complete sets of chromosomes; pure diploid populations are an isolated genetic variation). In Connecticut, the diploid population of blue-spotted salamanders is only located in the eastern part of the state, the same area that is home to eastern spadefoot toads.

In 2008, a SWG project was initiated to determine movement patterns of these two GCN species. Spadefoot toads and blue-spotted salamanders were collected on rainy nights during the spring breeding season, either on the edges of breeding pools or

while moving across roads. Collected animals were transported to a lab and implanted with radio-implants or "PIT" tags (Passive Integrated Transponders), which allow identification of re-captured individuals. Biological measurements were taken on all collected animals. Animal locations were documented through coordinates obtained via GPS and habitat characteristics were recorded for each location.

Data from this study will provide a better

understanding of the type and extent of habitat needed to protect these species. This information will help in determining the potential impact of disturbances to the species' habitats and will be critical in evaluating development project proposals. It will also give land managers baseline information for prioritizing land protection efforts.

### **Whip-poor-will Surveys**

The whip-poor-will, named for its call, is a unique insect-eating bird that feeds in open areas at night. Data are lacking on whip-poor-wills; however, all indications suggest they are experiencing a long-term decline. Because of the bird's nocturnal habits and cryptic nature, standard survey and monitoring techniques do not work well. As a result, long-term data that could be used to quantify whip-poor-will population status or to understand population declines have been sparse. Obtaining this much needed information on whip-poor-wills in the Northeast has been a long-term goal of state biologists and



*The Wintering Waterbird Surveys demonstrated that Long Island Sound is a very important wintering and staging area for migratory waterbirds, like this common loon.*



Partners In Flight. The State Wildlife Grants Program has enabled the DEP Wildlife Division to work with other Northeastern states to develop better survey protocols for whip-poor-wills. Surveys were conducted at night, over a three-year period (2005-2007), using many "citizen scientist" volunteers. Results helped biologists better refine survey methods and were often consistent with general observations of whip-poor-wills made by the public. Information on land use and habitat characteristics was collected at sites where whip-poor-wills were documented. These data will be analyzed and should provide information on preferred habitats, as well as enhance understanding and conservation of this unique species.

### Wood Turtles in Fairfield County

Wood turtles were once widely distributed in Fairfield County and neighboring Westchester County, in New York. However, populations of this semi-aquatic turtle are becoming increasingly rare. Wood turtles inhabit floodplain forests, meadows, and other open areas, such as power-line right-of-ways. Habitat loss and fragmentation of suitable habitat due to development, coupled with the degradation of remaining habitats, are considered the main reasons for the decline of wood turtles, especially in Fairfield County.

SWG funds have allowed the DEP Wildlife Division to conduct a two-year study on wood turtle populations in Fairfield County to collect baseline data in highly impacted areas. Visual wood turtle surveys were conducted from March 2007 through June 2008 in various rivers and streams throughout the county. Biological data (age, weight, and sex) were taken from all individual turtles found and habitat use was recorded. Each turtle was individually marked for future identification. Two previously documented populations were verified and three new populations were discovered as a result of this study. The aquatic and terrestrial habitats



*In 2008, a State Wildlife Grant project was initiated to determine movement patterns of the eastern spadefoot toad, a Connecticut endangered species. Project results will give land managers baseline information for prioritizing land protection efforts.* PHOTO BY P. J. FUSCO



*Habitat loss and fragmentation of suitable habitat due to development, coupled with the degradation of remaining habitats, are considered the main reasons for the decline of wood turtles. SWG funds have allowed the DEP Wildlife Division to conduct a two-year study on wood turtle populations in Fairfield County to collect baseline data in highly impacted areas.* PHOTO BY P. J. FUSCO



*The whip-poor-will is experiencing a long-term population decline. The SWG Program helped the DEP Wildlife Division work with other Northeastern states to develop better survey protocols for this unique bird. Survey data should provide information on preferred habitats, as well as enhance understanding and conservation of whip-poor-wills.* PHOTO BY P. J. FUSCO

used by these populations will be mapped and incorporated into existing watershed management plans for consideration in future land use planning decisions.

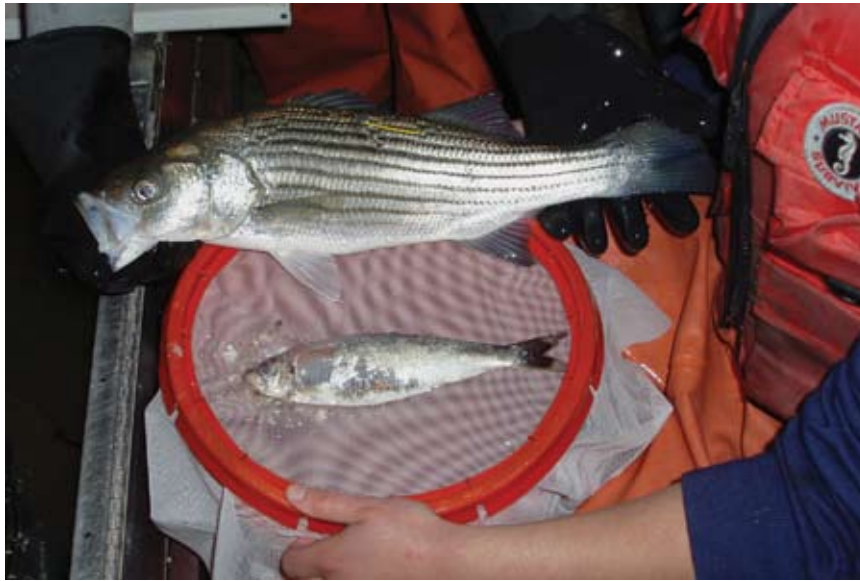
### Assessment of River Herring and Striped Bass Populations in the Connecticut River

This SWG investigation was prompted by recent precipitous declines in annual returns to the Connecticut River of anadromous river herring (alewives and blueback herring), two species that have considerable ecological importance. The goal is to determine the degree to which predation by striped bass has contributed to these declines. Striped bass numbers have increased dramatically over the same time frame as river herring have decreased.

In this project, biologists from the University of Connecticut collected data on the abundance, distribution, and population structure of river herring and striped bass over a section of the Connecticut River during the spawning migration of these species. Data on the diet of striped bass have also been collected. Boat electrofishing was used to capture river herring and striped bass during nighttime sampling operations in the springs of 2005-2008. All river herring were measured, and a sub-sample was retained for sex, species, age, spawning history, and fecundity analysis. All striped bass were measured and subjected to gastric lavage (stomach pumping) to determine diet composition. Striped bass were tagged and returned to the river.

The research showed that the overwhelming majority of river herring captured were virgin three- and four-year-olds; whereas, older repeat spawners (5-6 years old) dominated historic runs. A wide size range (6-48 inches) of striped bass was captured. Striped bass in the size range of 24-35 inches preyed most heavily on river herring,

while striped bass greater than 35 inches consumed primarily American shad. Striped bass less than 24 inches fed primarily on other smaller species. The data on diet and consumption of individual striped bass are being combined with estimates of striped bass abundance to derive population-wide estimates of predation on river herring. Population modeling will enable researchers to quantify the impact of striped bass recovery on the abundance river herring.



*A striped bass captured in the Connecticut River near Windsor Locks in May 2007 is shown with a blueback herring removed from its stomach via gastric lavage. As is evident from the picture, striped bass are voracious predators that have no problem consuming prey items up to 60-65% of their body size.* PHOTO BY E. SCHULTZ

## Investigating Stream Temperature and Brook Trout Population Fragmentation

The brook trout has been in decline throughout its range in eastern North America. Many current populations have been fragmented and are now restricted to headwater streams. Watershed development and climate change pose serious threats to the persistence of this species.

Current research is investigating brook trout populations in two headwater stream channel networks in Connecticut. The objectives are to document the relatedness patterns (genetic structures) and spatial distributions of brook trout populations within headwater systems so as to make inferences about the effect of future climate change and groundwater withdrawals on brook trout persistence.

Field work started in summer 2008. Genetic samples (fin clips), information on the movement of individual fish, and data on population abundance were collected. Stream water temperature data are being collected using temperature loggers. In general, brook trout distributions were not uniform along the stream networks, and many adult fishes moved upstream, sometimes into tributaries and up to 1.2 miles during



*University of Connecticut and DEP Fisheries Division biologists are collaborating on an investigation of brook trout populations in two headwater stream channel networks in Connecticut.* PHOTO BY J. VOKOUN



*A cooperative project was initiated in 2005 by the DEP and the University of Connecticut to collect information necessary for the conservation and restoration of the state endangered burbot.* PHOTO BY D. EDWARDS

the autumn spawning season. This research has documented the importance of diverse habitats and the need for connectivity within a watershed. This study will provide critical information for the conservation of brook trout, not only in study areas but also in other areas where climate change is predicted to reduce the extent of coldwater within watersheds.

## Survey of Short- and Long-tailed Weasels

Connecticut is home to short-tailed and long-tailed weasels, both listed as GCN species. Starting in 2007, SWG funding has enabled the DEP Wildlife Division to conduct a survey to assess the distribution of the two species in the state. For this project, weasels were captured using three types of live traps and roadkills were collected throughout the state.

Although long-tailed weasels tend to be larger than short-tailed weasels, it can be very difficult to distinguish these species from one another. Tissue samples were collected and used for DNA analyses to accurately identify each individual weasel.

Results of this study indicate that long-tailed weasels are common throughout the entire state, while short-tailed weasels are less common and typically found in northwestern Connecticut. With further analysis, this project will expand knowledge of weasel distribution and habitat associations in the state, greatly contributing to future management decisions.

## Mapping Key Wildlife Habitats

The development of Connecticut's CWCS identified the need for better mapping of key habitats important to GCN species. This project will result in a digital map showing the distribution and extent of key habitat types important to GCN species, along with

information about habitat size, condition, and associated vegetation. Some of the key habitats that will be considered include Atlantic white cedar swamps, bogs, calcareous fens, sand barrens, brackish and freshwater tidal marshes, coastal dunes, and sea-level fens. The information from this project, which will become part of the state's Natural Diversity Data Base, will be used to review the environmental status of the habitats and to set priorities for site management and conservation.

## Habitat Use and Population Demographics of Burbot in Northwestern Connecticut

Burbot are the only members of the cod family that live in freshwater. The species is of global conservation concern and may be particularly vulnerable in areas like Connecticut, which are near the southern extent of its range. In Connecticut, burbot are listed as a state endangered species having only a single known viable population in northwestern Connecticut. A cooperative project was initiated in 2005 by the DEP and the University of Connecticut to collect information necessary for the conservation and restoration of this unique species.

Habitat features were surveyed at stream sites where burbot were found and at locations where they were absent. Researchers determined that the most important habitat characteristics for burbot are a substrate with lots of boulders and low amounts of fine sediment, and relatively deep water. On a larger scale (200–400 yards of stream length), lower water temperatures, a relatively high gradient, and low stream channel sinuosity (less curves and bends) were also important.

The demographics and diet of the burbot population were also studied. Connecticut fish were small compared to more northerly populations, averaging only 7.5 inches, with the largest fish at 14 inches. The fish also appeared to have surprisingly short life spans with a maximum age of only five years. Burbot fed primarily on mayflies but also consumed a variety of other invertebrates. Surprisingly, fish were consumed by only three of the burbot that were examined. Compared to other burbot populations, Connecticut burbot stay small, reproduce at a length and age



P. DEAN

*Starting in 2007, the DEP Wildlife Division has been conducting surveys to assess the distribution of short- and long-tailed weasels in Connecticut. This project will expand knowledge of weasel distribution and habitat associations in the state, greatly contributing to future management decisions.*



K. METZLER

*One of the key habitats important to greatest conservation need species, as identified in Connecticut's CWCS, is the grassy glade and bald on a trap rock ridge (shown in the above photograph). A habitat mapping project will result in a digital map showing the distribution and extent of these key habitat types, along with information about habitat size, condition, and associated vegetation.*

which are typical of juvenile burbot elsewhere, and do not develop a fish-based diet. The information obtained in this study will be

used by the DEP to conserve Connecticut's only existing burbot population and to guide future restoration efforts.

*This adult whip-poor-will and its nestling are just one example of a species that was the focus of a State Wildlife Grant project.*

*Since its inception in 2001, the State Wildlife Grant Program has provided funding for over 50 projects on birds, mammals, fish, invertebrates, reptiles, and amphibians in Connecticut.*

