Salmon in the Classroom Celebrates 15 Years
*By Kimberly Sullivan, DFW Aquatic Resource Education Coordinator*

Twenty students stand by the edge of a cold stream with clear plastic cups, each containing a single Atlantic salmon fry (juvenile stage salmon). The fish is about 1 to 1½ inches long, with vertical lines (parr marks) that help it camouflage. In the stream, five more students stand in chest waders; their job is to scare the larger fish away from the young and vulnerable fry. It was rumored that a few fry were lost to larger fish last year, so they take every precaution to maximize the survival of the tiny fish. On the count of three, the fish are released into the stream and they immediately swim for the cover of rocks, where they will begin their journey.

Fifteen years ago, schools across Rhode Island were invited to join a new RIDEM Division of Fish and Wildlife Aquatic Resource Education (ARE) initiative called “Salmon in the Classroom.” On a cold January morning, nineteen teachers from fourteen schools across the state gathered together at the Great Swamp Field Headquarters to listen to Mr. James Carroll of the

Pictured left: Students release classroom-raised salmon fry into the Wood-Pawcatuck Watershed
THE DIVISION OF FISH AND WILDLIFE MISSION STATEMENT

Our mission is to ensure that the freshwater, wildlife, and marine resources of the state of Rhode Island will be conserved and managed for equitable and sustainable use.

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Follow us on Twitter @RhodeIslandDEM
Visit our Facebook page @RIFishWildlife
The Great Swamp Management Area is a 3,500 acre property owned by the Rhode Island Department of Environmental Management.

**HABITAT:** The Great Swamp boasts a variety of habitats, from old fields to shrublands, bogs, cedar swamps, and oak-holly forest. All the habitat you see is carefully managed for wildlife. The shrublands are important habitat for birds and small mammals. Regular mowing of fields manages invasive plants such as autumn olive and multiflora rose, leaving space for native, warm-season grasses and wildflowers to be planted. The impoundment is the largest wetland in the management area, and is home to many interesting plants, including pitcher plants, sundews, and white water lilies. Water levels in the impoundment are closely monitored to encourage growth of wetland grasses and sedges, which are important food sources for waterfowl.

**BIRDS:** Many bird species utilize the Great Swamp in all seasons! Keep an eye and ear out for the following:

- **Songbirds:**
  - Black-capped Chickadee
  - Catbird
  - Downy Woodpecker
  - Eastern Towhee
  - Eastern Phoebe
  - Eastern Whip-poor-will
  - Ovenbird
  - Tree Swallow
  - Yellow Warbler

- **Wading Birds:**
  - Great Blue Heron
  - Great Egret*
  - Green Heron

- **Waterfowl:**
  - Canada Goose
  - Mallard
  - Northern Pintail*
  - Ring-necked Duck
  - Wood Duck

- **Upland Game Birds:**
  - American Woodcock
  - Wild Turkey

- **Raptors:**
  - Bald Eagle*
  - Broad-winged Hawk
  - Northern Harrier*
  - Osprey
  - Peregrine Falcon*
  - Red-tailed Hawk

- **Occasional**

**Mammals:** Many mammals call the Great Swamp home, such as deer, coyote, fox, river otter, beaver, fisher, raccoon, cottontail rabbit, and flying squirrel. Biologists band and catch bats to study their populations and habitat use. Walking along the impoundment, you’ll see active beaver lodges and places where these industrious rodents have cut down small trees and shrubs. Tracks and scat also indicate mammal activity throughout the management area.

**Reptiles & Amphibians:** The Great Swamp boasts a variety of amphibians and reptiles throughout an assortment of wetland and upland habitats. Keep an eye out for snapping turtles that emerge from the water in June to lay their eggs along the impoundment path. You may encounter a variety of snakes during your visit, including the northern water snake or ribbon snake. None of the 12 snake species that occur in Rhode Island are venomous. In early spring, wood frogs and spring peepers can be heard calling.

**Great Swamp Monument:** The Great Swamp Monument is located on the western edge of the Great Swamp Management Area, off of Great Swamp Monument Road (a left turn off of Route 2 south). Walking past the gate, the monument is a quarter mile down the path. Dedicated in 1906, this monument pays tribute to the Native Americans and Colonial soldiers who died in the Great Swamp Massacre during King Philip’s War in December 1675.
GREAT SWAMP MANAGEMENT AREA FLUORESCENT ORANGE

REQUIREMENTS FOR ALL USERS: 200 square inches of orange from the third Saturday in April (4/20/19) to the last day in May (5/31/19) and the second Saturday in September (9/14/19) to the last day of February (2/28/20)

New And Improved Target Range at the Great Swamp
By Jessica Peña, DFW Hunter Safety/Aquatic Resource Education Office

The Great Swamp Shooting Range is operated by the Division of Fish & Wildlife and offers public target shooting on a seasonal basis. A FREE permit is required prior to use. Non-permitted visitors are allowed, but they may not handle firearms and are not allowed on the firing line. It is mandatory to obtain a range permit prior to using the Great Swamp Shooting Range.

Visit our website for more information on the permitting process, and to download a range permit application: dem.ri.gov/greatswamprange

The shooting range is open 7 days per week from April 1 through September 30. Please check website for hours of operation. Hours may vary due to staffing, training activities, maintenance, and/or weather conditions.

Family-friendly staff on duty at all times!

Facilities include:
• Baffled rifle/pistol ranges, includes 16 covered shooting stations:
  • 8-50 yard shooting lanes
  • 8-100 yard shooting lanes
• Wheel chair accessible shooting stations
• 30yd. Archery Range: back stops are provided.
• 2 shotgun shooting stations with electric clay target throwers available.
• Pavilion with picnic tables

There is no telephone service at the range. Please call the Hunter Education Office (Mon.-Fri. 8:30am—4:00pm) at 401-539-0019 or email Jessica.Pena@dem.ri.gov

User Pays, User Benefits

Funding for the Great Swamp Shooting Range was generated by manufacturer federal excise taxes collected on firearms, ammunition, and archery equipment. These monies are managed as a federal grant program to the states under the Wildlife Restoration Program by the U.S. Fish and Wildlife Service (USFWS) as a “User Pays—Public Benefits” program. This range was developed through a funding partnership with the state of RI and the USFWS’s Wildlife and Sport Fish Restoration Program.
Connecticut River Salmon Association speak about Connecticut’s successful Salmon in the Schools program. Twelve of those original 14 schools still participate. Despite changing curricula, February still means that these Rhode Island middle and high school students are prepping their salmon incubator systems and getting ready for their Atlantic salmon egg delivery.

“Salmon in the Classroom” is a multidisciplinary program which combines classroom learning with hands-on field trips to the Wood-Pawcatuck Watershed in accordance with the RI Federal Aid Anadromous Fish Restoration program. The “Salmon in the Classroom” program is the perfect way to engage classrooms in DFW projects, teach students about the importance of fish biology, and create environmental stewards. This program also incorporates different lessons outside of the science curriculum including math, history, art, and language arts.

Each school receives equipment to build an incubator system. Once built, the classes receive and hatch the Atlantic salmon eggs, raising them to the fry stage to be stocked into the Pawcatuck River Watershed. While the eggs are hatching and developing into fry, the teachers present the class with activities ranging from salmon biology and ecology to the history of Rhode Island’s Industrial Revolution. A stocking field trip is sponsored by the ARE program for each school, and students get to perform a series of chemical and biological monitoring techniques at their specified stocking location. By combining classroom curricula with outdoor experiential elements, “Salmon in the Classroom” is an excellent resource for teachers to engage students in science first-hand.

Schools from as far away as Cumberland, Woonsocket, and Little Compton have traveled to the Wood-Pawcatuck River Watershed to release their salmon fry into the streams and tributaries. On average, 30 schools participate each year. Over 25,000 Rhode Island students have participated in some aspect of the program so far, and they have stocked over 80,000 Atlantic salmon fry. Over the past few years, fisheries biologists have collected some of the students’ released fish during watershed surveys. A smolt – the stage at which salmon head out to the ocean - was found in the Queen’s River, a location only stocked by a participating “Salmon in the Classroom” school. The program continues to grow in popularity and routinely adds two or three schools per year.

Overall, “Salmon in the Classroom” has had fifteen successful years serving Rhode Island students, helping them learn the importance of fish habitat and caring for the environment. It has only been possible because of the dedicated school teachers who volunteer their time to be trained in the program and work to integrate it into their curricula. With the help of these teachers, and the continued support of the school districts, the ARE program looks forward to many more successful years. If you, or someone you know, would be interested in participating in this program, please contact Kimberly Sullivan at kimberly.sullivan@dem.ri.gov or 401-539-0037.
Thank You

to Our Hunters, Trappers & Anglers

By Jay Osenkowski and Christine Dudley, DFW Deputy Chiefs

In Rhode Island, we are lucky to have many citizens who proudly participate to preserve and protect our ecologically and economically important natural resources; our marine areas, freshwaters, forests, and open spaces. Rhode Islanders understand the importance of conserving these precious wild places. None more so than those who have dedicated themselves to supporting the RIDEM Division of Fish and Wildlife (DFW) by choosing to hunt, fish, trap, and shoot in Rhode Island. We are fortunate to have many citizen volunteers to assist us in natural resource management as well. We thank you all.

Some may not know, that it is by way of hunting and fishing that the Rhode Island Division of Fish and Wildlife is funded, and these funds enable us to conduct natural resource management and conservation. Through the federal wildlife and sport fish restoration programs, overseen by the US Fish and Wildlife Service (USFWS), excise taxes are collected from manufacturers of firearms, ammunition, archery equipment, fishing equipment, and the sale of motor boat fuels. These revenues are apportioned to state fish and wildlife agencies, such as DFW, to help fund programs. Hunting and fishing licenses, permits, trout and duck stamp fees, and in some cases, volunteer participation documentation, are used to match the federal funds as restricted receipts. This money is used only for the purposes of monitoring and conserving populations of fish and wildlife, maintaining management areas for hunting, fishing and boating, education, and outreach programs. This funding also supports land acquisition through the DFW, helping to secure valuable habitat for game and non-game species.

In 2018, we launched our new online licensing system, and we thank all our resident and non-resident participants for their support. It was an overwhelming success, with over 73,000 customers served this first year. Although this was a transition period for many, we believe the new online system will streamline and improve the process of purchasing Rhode Island licenses, permits, stamps, and tags. We will continue to review and improve this system to make this process easy and accessible for all participants.

We are grateful for your continuing support and advocacy. It is thanks to you that Rhode Islanders continue to have access to so many beautiful wildlife management areas. We hope you will enjoy a wonderful 2019 in Rhode Island’s wild outdoors!

Sincerely,

The Rhode Island Division of Fish & Wildlife
A young fawn curled up alone is not abandoned, it is safe and mom will come back for it! Handling it will cause severe distress and can harm its chances of survival. The best thing to do is leave it alone!

White-tailed deer fawns are born in late May through mid-June. During their first weeks they cannot safely accompany their mother as she travels around feeding. To keep them safe, the mother deer (doe) will leave them curled up in a safe place. These hiding places are usually in areas of thick ground cover such as ferns or tall grasses, though occasionally they can be in close proximity to populated areas. The doe will only come to feed the fawn a few times during the day or after dark, and is able to do so inconspicuously—we may never even see her.

Sometimes people, or their pets, will come across these fawns. Believing them to be abandoned; these well-intentioned people attempt to “rescue” the young animal, by taking them home or to a wildlife rehabilitator. However, these fawns are not abandoned; in fact, the doe will often be nearby, out of sight. In these cases, it is best to leave the fawn alone. Do not handle them or move them unless absolutely necessary. Please note: it is illegal to possess wildlife, such as white-tailed deer, or rehabilitate them without a permit from the RI Division of Fish and Wildlife.

“Kidnapped” fawns have a much lower chance of survival. Rehabilitating fawns is expensive and difficult. With limited resources, Rhode Island’s network of Wildlife Rehabilitators can only accommodate a small number of deer each year. These resources are needed for those who have been legitimately orphaned due to their mother being killed in vehicle strikes, or separated from her in some other way.

There are some rare instances when interference is warranted. If you think there is a legitimately orphaned fawn, please contact the RI Wildlife Clinic or the RI Division of Fish & Wildlife so that professionals can assess the situation and provide help if it is needed.

WRARI Wildlife Clinic: 401-294-6363
RI Division of Fish & Wildlife: 401-789-0281

For more information about white-tailed deer go to dem.ri.gov, or by emailing DEM.DFW@dem.ri.gov, or call 401-789-0281

WRARI is a 501c3 nonprofit organization that provides professional care for injured, orphaned, or sick wildlife in Rhode Island. If you would like to help these fawns, and other wildlife, get off to a good start, you can visit the WRARI website by going to: www.riwildliferehab.org/support-us
A Need for Snake Conservation in Rhode Island

By Scott Buchanan, DFW Herpetologist

Rhode Island is an excellent place for hiking in the summer - from beach walks along the coast, to the forested trails of Arcadia Management Area. While exploring Rhode Island’s coastal and woodland landscapes, we are bound to encounter wildlife. Some of the most interesting species offer us only a glimpse of themselves and can catch your eye when you least expect it - this is especially true of snakes. Whether they cause fear or fascination, spotting a snake always brings excitement to a day outdoors. Despite its small size, Rhode Island has twelve species of native snakes. Each of these species plays an important role in their ecosystem, serving as both predators and prey. Though sometimes mistaken for potentially dangerous species, none of Rhode Island’s snakes are venomous and they pose no danger to people. The eastern milksnake (Lampropeltis t. triangulum) with its blotchy pattern, is sometimes mistaken for a copperhead. Northern watersnakes (Nerodia s. sipedon) are often misidentified as cottonmouths. And eastern hog-nosed snakes (Heterodon platirhinos) are the most fearsome actors of all – when threatened they puff out their necks like a cobra and even feign strike. If harassed for long enough, they will even play dead. Unfortunately, these cases of mistaken identity often lead to the needless killing of these beautiful native species.

That’s exactly what happened to the timber rattlesnake (Crotalus horridus), a species native to the Northeast, that could be found in Rhode Island’s forests as late as the 1970s. Once harvested indiscriminately, the timber rattlesnake eventually vanished from the state. In addition to being killed out of fear, reptiles and amphibians also fall victim to passive collection by enthusiasts, and to poaching by people hoping to sell them in the pet trade. Along with habitat fragmentation and roadkill from increasing urban sprawl, these added pressures have resulted in five snake species to be listed as “Species of Greatest Conservation Need” (SGCN) in Rhode Island. These are the species that state biologists generally focus on when making management decisions.

What management decisions would benefit snakes?

Protected areas, like state-owned management areas and federal wildlife refuges, are invaluable to conservation, but animals move around. Throughout the year, snakes move across the landscape in search of food, mates, and appropriate habitat. Inevitably, they will end up crossing roads and this has proven to be a major risk to our snake populations. Modifying roads and
culverts to facilitate the passage of reptiles and amphibians from one habitat patch to the next has the potential to greatly reduce mortality. Motorized off-road vehicles are often banned from management areas to prevent striking amphibians and reptiles; they have the potential to damage the habitat we’re trying to preserve, and run over the species we’re trying to protect.

Many of our species of snakes rely heavily on amphibians for food, so managing for amphibian habitat can benefit snakes as well. Most amphibians require wetlands for breeding, so protecting vernal pools, marshes, streams, and other wetlands ensures these animals have the suitable habitat they need to create the next generation. Runoff from roads and agriculture brings chemicals and sediment into these waters, diminishing their quality. Proper buffer distance from any type of development is crucial for preserving wetlands.

**What do I do if I find a snake?**
- Take a moment to admire them. Snakes are cryptic and it is a lucky person who stumbles upon one in the wild.
- Leave them alone. Just like other wildlife, snakes will feel threatened when approached or handled and this can come at a cost to the animal.
- Never kill a snake. Snakes encountered in Rhode Island are not dangerous and the intentional killing of non-game wildlife is against the law.
- If you encounter a snake in an unwanted area (basement, garage), move it along with a gentle spray of water or by ushering it along with a broom. You can coach it into an empty trashcan using either of these methods, and release it somewhere nearby.

For more information about snakes native to R.I., go to the RIDEM website at [http://www.dem.ri.gov/programs/fish-wildlife/wildlifemanagement](http://www.dem.ri.gov/programs/fish-wildlife/wildlifemanagement) and click on the “Native Snakes” document, or email DEM.DFW@dem.ri.gov.

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**The 2019-2020 Freshwater Fishing Regulations Guide is Available Now!**

Pick up a copy today at any of the following locations:

- RIDEM Headquarters, Boat Registration & Licensing Office, 235 Promenade Street, Providence
- RIDEM, Division of Fish & Wildlife Great Swamp Field Headquarters, 277 Great Neck Road, West Kingston
- Most town halls and freshwater fishing license vendors; listed on the RIDEM website at: [http://dem.ri.gov/programs/bpoladm/manserv/rihfid/agents.pdf](http://dem.ri.gov/programs/bpoladm/manserv/rihfid/agents.pdf)
Shrews belong to the mammalian Order Insectivora, which includes moles and their relatives. As the name implies, species of this order feed primarily on insects, but not exclusively so. All shrew species that occur in the United States belong to the Family Soricidae; they are characterized by a long, pointed snout, five toes on each foot, very small eyes and ears, and soft, silky fur. Their upper front teeth, called unicuspids, are much enlarged and protrude forward, and are very efficient for capturing small prey. Some may be surprised to learn that they are not rodents, and despite looking similar to mice, they are quite different.

Shrews are fossorial, which means they are adapted to live underground. They utilize the burrows and trails of small rodents and other animals. Despite being very active, shrews are not frequently seen, spending their time below the surface of the ground or in the leaf litter. They occur in a wide variety of habitats and can be very abundant in the right type of habitat.

Shrews are some of the smallest mammals, and the pygmy shrew, *Sorex hoyi*, is the smallest mammal in North America, weighing only about two grams. Being so small, shrews have a proportionally high surface-to-volume ratio and tend to lose body heat rapidly. Consequently, they have a very high metabolic rate and must consume food almost continuously to maintain body temperature. They need to feed every couple of hours and can consume as much as three times their body weight every 24 hours.

Shrews are not long-lived, most living only 12 to 18 months at most. They can have two or three litters per year, with 2-10 young per litter depending on the species. Nests are constructed of grasses, leaves, and moss, under logs, rocks or in shallow burrows. Shrews do not hibernate and remain active even in the coldest temperatures.

Some species of shrews use a type of echolocation, a series of high-pitched squeaks to navigate through their surroundings and possibly to locate prey. Shrews have glands on their hindquarters that emit a very pungent odor, possibly used as a sexual attractant. This may also make them unappealing to many mammalian predators. Hawks and owls, however, readily prey on shrews.

There are four species of shrews known to occur in Rhode Island. A fifth species, the long-tailed shrew, *Sorex dispar*, was reported by Cronan and Brooks in *The Mammals of Rhode Island* (1968), with two specimens reportedly being taken in South Kingstown “adjacent to the coast” in 1960. Given the known distribution and habitat requirements of this species, and that the whereabouts of the specimens is unknown, this is probably a questionable record.

**Masked shrew, Sorex cinereus**

This is one of the smallest shrew species and the smallest mammal in Rhode Island. It does not have an obvious mask, so it is not clear how it got its common name. Masked shrews have grayish-brown backside, and are lighter in color below. They are darker overall during the winter months. They can be very abundant, particularly in wet meadows and brushy forest edges. Weights of collected specimens range from three grams to as much as eight grams, but most specimens are less than four grams. They eat a wide variety of insects and their larvae, as well as worms, salamanders, and anything they can capture. Masked shrews can be found throughout the mainland portions of the state and likely do not occur on any of the islands of Narragansett Bay or Block Island.

**Northern water shrew, Sorex palustris**

This relatively large shrew is adapted for a semi-aquatic lifestyle. Small, forested streams seem to be their preferred habitat, but they can be found in a variety of aquatic habitats. Their hind feet are broad and are covered with stiff hairs. They are excellent swimmers and have been observed running
across the top of the water for short distances, supported by the surface tension. They dive for aquatic insects such as mayflies and caddisfly larva and also eat other invertebrates such as worms, snails and slugs. They are also known to eat fish eggs and salamanders. They are dark gray in color (almost black), with a long tail. Specimens collected in Rhode Island range between 10 and 16 grams.

At the time *The Mammals of Rhode Island* was published in 1962, there were no authentic records for the northern water shrew in Rhode Island. The first authentic record was collected by C. Robert Shoop of the URI Department of Zoology in May 1970 at the W. Alton Jones campus in West Greenwich. He also reported collecting five specimens of smoky shrews. Small mammal surveys conducted by DFW between 2004 and 2007 documented sixteen new sites for the species, including sites in Tiverton and Little Compton. This species can be found in appropriate habitat in the mainland portions of the state, but it does not occur on any of the Narragansett Bay islands or Block Island. The northern water shrew is listed as a Species of Greatest Conservation Need under the state’s Wildlife Action Plan, primarily because so little is known about its abundance and distribution in the state.

**Smoky shrew, *Sorex fumeus***

The smoky shrew is similar in appearance to the masked shrew, but much larger. In the summer, these two species look particularly similar as the smoky shrews coat is more brown than gray. In the winter it is more gray than brown. The ears are more prominent in this species than other shrews. It seemingly prefers shady, damp woods but little is known about this cryptic species in Rhode Island. There are only a few specimen records of this species, including the specimens collected by Shoop at Alton Jones in 1970. Cronan and Brooks mention a specimen from Chepachet with an unknown date, that resides in the Smithsonian collection. The most recent record was collected in the Big River Management Area in West Greenwich. No specimens were collected during other small mammal surveys conducted by the DFW. Like the northern water shrew, the smoky shrew is listed as a Species of Greatest Conservation Need, primarily due to lack of knowledge about this species.

**Northern short-tailed shrew, *Blarina brevicauda***

This is the largest and most common shrew in Rhode Island. It is recognized by its large size, dark slate gray color and short tail. This is the species that the cat left on the doorstep. People often misidentify it as a mole. It can be found in a wide variety of habitats including suburban back yards. Specimens collected in Rhode Island have ranged from 12 grams to as much as 33 grams in weight. This species will eat a wide variety of insects and other invertebrates and just about anything else it can catch. They have been known to kill and eat mice equal to or greater in size than themselves. The northern short-tailed shrew is one of the world’s only venomous mammals. It produces a toxic substance in its salivary glands that can immobilize or kill small prey. This species is common throughout the mainland portions of the state and occurs on Aquidneck Island. It may also occur on Conanicut and Prudence Islands although there are no known records for these islands.
Join us for the 2019 Annual Herring Count!
Help welcome the return of spring and RI’s herring population back to our rivers! Every spring in Rhode Island, herring make their annual trip from the Atlantic Ocean back into the freshwater systems from which they were born, and we need your help counting them as they arrive. Surveys are fun and easy and work around your schedule. You can sign up to do 1 survey or several. Surveys are fun and easy, and can take as little as 10 minutes. Sites are surveyed between April 1st and May 20th. Survey sites are available in North Kingstown, Warwick, and East Providence. To sign up for a survey, please email DEM.DFW@dem.ri.gov.

Free Firearms Marksmanship Training at the Great Swamp Shooting Range
By Appointment Only, Every Tuesday from 9am—12pm
Individual training with live fire included. Training open to all but designed to help novice shooter. For more information or to sign up email Scott.Travers@dem.ri.gov or call 401-539-0019.