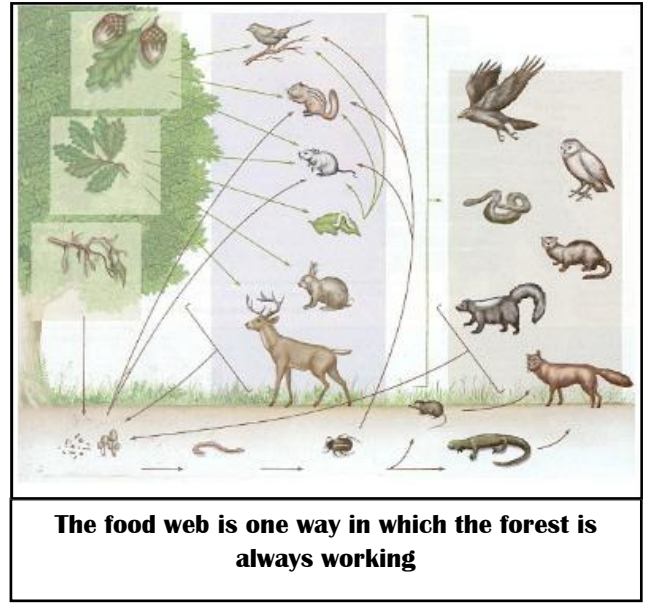


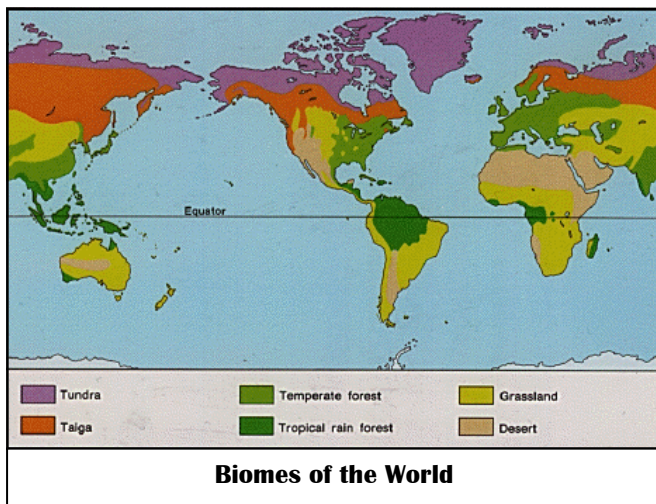
Forests: A Working World in Your Backyard

Forestlands are complex, biodiverse ecosystems that cover nearly one-third of Earth's Surface. Forestlands provide human, animal, and plant communities with many products and services that without would compromise the survival of both productive forests and the biotic community at large. Trees provide us with food to eat, timber for our homes, firewood to keep warm, medicine, clean air and water and so much more. In addition, they provide critical habitat for much of Rhode Island's wildlife, moderate the temperature of rivers and streams which aquatic animals rely on for survival, and replenish nutrients in the soil. Like all living, working systems, forest lands are always changing and adapting. To preserve the productivity and health of Rhode Island's forests, it is critical that we manage forests to achieve optimal conditions for wildlife needs and human needs. This can be as simple as conserving forestlands for habitat, or it can be as complicated as manipulating the growth cycle of trees for harvesting timber or for recreational areas. In these pages, you will learn about the interconnectedness of forests with all we do in Rhode Island, and throughout the globe.



What are forests?

Forests are a type of worldwide **biome**; the forest biome is a biological community that is dominated by trees and other woody vegetation. A biome is the broadest definition of a biological community. Some common biomes include deserts, freshwater, saltwater, grasslands, etc. Worldwide there are three type of forest biomes which include Taiga, Tropical, and Temperate. **Taiga**, or boreal forest, represents the largest of the forest biomes and are comprised mostly of coniferous trees. **Tropical forests** are characterized by their wet and dry seasons and boast the greatest amount of biodiversity for any biome and/or ecosystem in the world. **Temperate forests** are what cover most of New England, and are a mix of **deciduous** (Maple, Oak, Hickory) and **coniferous** trees (Pine, Fir, Hemlock), and are governed by the four distinct seasons that us New Englanders are so fond of.



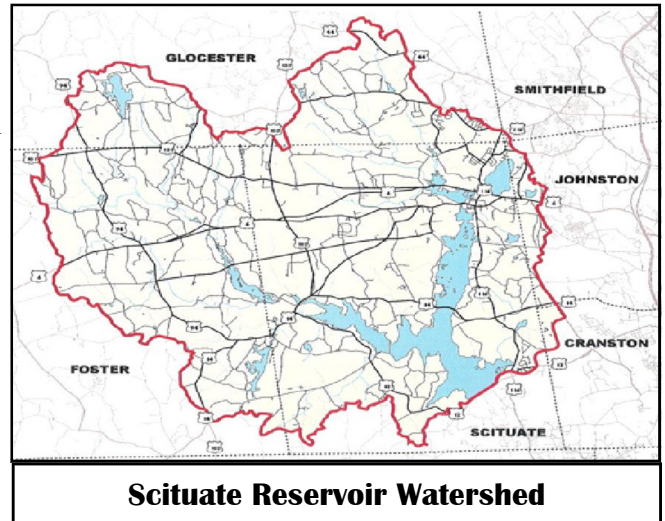
Within these biomes, there are ecosystems, habitats, and microhabitats, all of which play a critical role in the productivity and health of these biomes. A **microhabitat** can be something as small as a rotting log that sustains a population of beetles, worms, and moss. A **habitat**, commonly known as an animal's home, is an area of land that supports one type of species. For example: a squirrel's habitat includes the tree in which lives, the forest in which it forages, the pile of rocks it hides its nuts under, and the river where it drinks its water. **An ecosystem is an interconnected, biological community of plants and animals and includes non-living components such as sunlight, air, water, and soil.** The relationships between these organisms and non-living elements provide

the conditions that all need to survive: shelter, food, water, and space. An ecosystem can be very large, as in all the continuous forested land in the Scituate Reservoir Watershed, or as small as the woods behind your schools playground.

Forests, Watershed, and Clean Water: What's the connection?

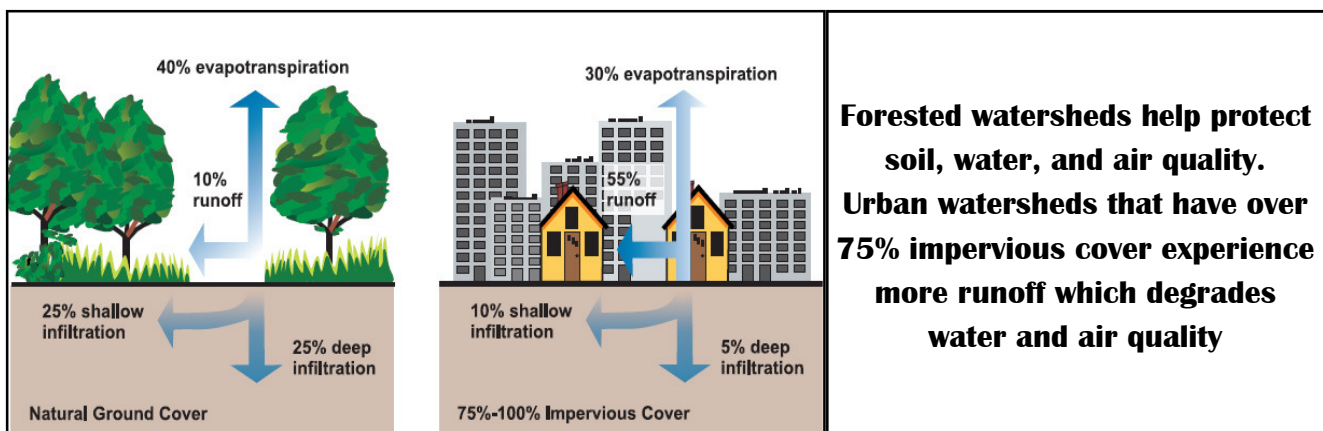
The Scituate Reservoir Watershed is of supreme importance in the state of Rhode Island, as this reservoir provides drinking water for over half of Rhode Island citizens. Providence Water takes special care of this watershed to ensure that this drinking water source remains unpolluted and in good health. Providence Water achieves this by educating the citizens of the watershed through programs like the Scituate Reservoir Watershed Education Program and by actively managing forestlands within the watershed.

What is a Watershed? – Every inch of land on Earth is part of watershed; everyone lives in a watershed. Within Rhode Island, there are 14 watersheds. A **watershed** is an area of land that water passes over, or under (via **groundwater**), on its way to another body of water. The boundaries of a watershed are defined by topography such as the ridges of mountains or hills, and the lowest point in a watershed is usually a valley filled with water; the Scituate Reservoir (**surface water**) is that body of water in the Scituate Reservoir Watershed. When it rains, water passes over the watershed and drains down to the lowest point, kind of like water falling on a bath tub and all draining to one location. If the land is polluted, rain water will pick up any pollutants on the ground, including **non-point source pollutants** such as oil, animal waste, fertilizers/pesticides, and sand/salt from the roads in winter time. The rain water then carries these pollutants with it until it reaches the Reservoir. Similarly, water can infiltrate through the ground and carry non-point source pollutants with it, which can contaminant our groundwater and drinking water wells. **Both groundwater and surface bodies of water have to be protected in order to successfully protect drinking water quality within the watershed.**



What is the value of a forested watershed? Land use within watersheds is directly connected to water quality. **Keeping land forested is the best way to protect water quality.** Likewise, water quality suffers as watersheds lose their forested lands and instead become developed with houses, roads, and businesses. These man-made structures reduce the amount of pervious land surface and increase the amount of **impervious** surfaces. Impervious surfaces create two challenges:

1. Impervious surfaces, like roads and parking lots, do not allow for water to seep through the soil and thus be cleansed in the process of recharging our drinking water sources; and
2. Impervious surfaces increase **stormwater runoff**, which means that in the event of rain, less rainwater seeps through the soil and instead water drains directly into surface bodies of water. In addition, this water moves more rapidly than if there were grass, leaves, or trees to help slow the flow. This increases the potential for soil erosion and for water to carry contaminants directly into our water resources.



Fortunately, *the Scituate Reservoir Watershed is heavily forested with 70% of land use being in forestland and actively managed.* Sustainable forestry management allows forests to be as productive as possible and in fact, forests become more productive than without management. Forestry management benefits include the following:

- 👉 Increased biodiversity of plants, animals, and insects
- 👉 Encouraged growth of native vegetation, which reduces the threat of harmful invasive species
- 👉 A healthier, less crowded forest which improves tree quality for timber products and encourages greater resistance to potentially harmful pests
- 👉 Protection of drinking water for both surface and groundwater sources
- 👉 Protection of water quality in natural systems like streams, rivers, and even the Narragansett Bay
- 👉 Recreational opportunities that are less detrimental to the environment
- 👉 Sustainable forest use which ensures that future generations will be able to benefit from all the forest has to offer

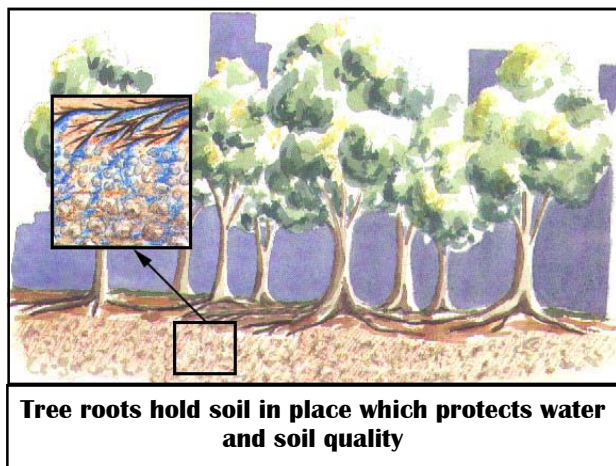
FOREST FUN FACT

ONE OF THE OLDEST LIVING TREES, A SPRUCE, WAS DISCOVERED IN 2008 IN SWEDEN AND HAS A ROOT SYSTEM THAT IS 9,550 YEARS OLD

What's a forest really worth?

Ecosystem Services: Worldwide forests have a tremendous impact on our natural resources and nutrient cycles that govern the function of our planet. The forest biome is a major component to biogeochemical processes that replenish our soils nutrients, maintain oxygen in our atmosphere, and even regulate global climate. Let's take a minute to reflect on all the wonderful services forestlands provide for us:

CLEAN WATER: Trees play a critical role in providing us, wildlife, and plants with clean water. Their job is two-fold. For starters, *tree roots hold soil in place.* This keeps soil right where it needs to be and allows soil to do its job. Soil cleanses water in 3 ways: 1) the soil is home to bacteria, fungus, and other microorganisms that actually “eat-up” some of the harmful pollutants, nutrients, and pathogens that may be in the water; 2) soil can “hold on” to harmful chemicals, naturally removing them from the water; and 3) the soil itself acts as a “filter” to remove nutrients and chemicals from the water. Secondly, *tree roots are also needed to help cleanse water before it reaches the groundwater.* Trees need certain nutrients to live, and some of these nutrients can harm people in excessive quantities, but trees need these nutrients and so absorb some of them through their roots. This removes these harmful nutrients from our water resources.



If you live in Scituate, Foster, Glocester, or Western Johnston, you live in the Scituate Reservoir Watershed, which provides over 60% of the state with clean drinking water. About two-thirds of the watershed is forested; this is the key to the drinking water that those who live in Providence and other urban parts of the state rely on. Thanks to Providence Water and conscientious forest owners throughout the Watershed, Rhode Island is able to have a safe drinking water source for its citizens.

SOIL PROTECTION & NOURISHMENT: Soil **erosion** can be caused by strong winds or water that

FOREST FUN FACT

ONE HEALTHY 100 FT TREE CAN
TAKE 11,000 GALLONS OF WATER
FROM THE SOIL AND BREATHE IT INTO
THE AIR IN A SINGLE GROWING SEASON

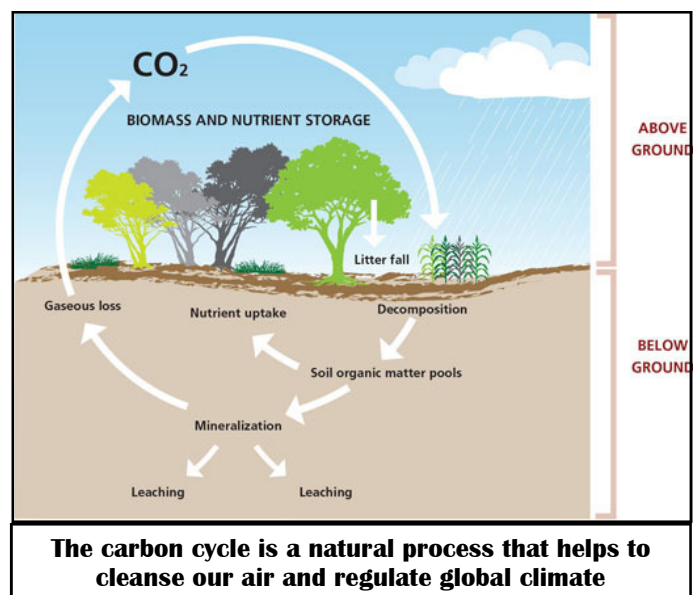
can wash away soil. Soil is nutrient rich and is needed by plants to grow and is also habitat for many micro-organisms, insects, and fungus that are important to the forest ecosystem. Tree roots hold soil in place, preventing soil erosion, and helping the forest stay productive. Also, where does the soil go when it washes away? It can end up in waterways like rivers and streams which can smother fish eggs on the riverbed, increase water temperatures which harm aquatic organisms, and create sedimentation downstream ultimately blocking flows and disrupting the hydrological cycle.

Forests also help to replenish soil nutrients. As trees lose their leaves, limbs break, or drop nuts, this organic matter decomposes on the forest floor. As they decompose, they release nutrients like carbon and nitrogen back into the soil which in turn leads to nutritious soil and more forest growth.

STORMWATER CONTROL: **Stormwater** is excess water that is not able to be absorbed naturally into the ground due to impervious surfaces like driveways and roads. Instead, this excess water runs off into storm drains or directly into nearby water bodies. *Stormwater can collect non-point source pollutants (oil/gasoline, pesticides/fertilizers, animal waste) and wash it directly into our rivers and streams. This is a major threat to water quality because stormwater does not get a chance to be filtered through the soil and tree roots, therefore not being cleansed before it gets into water resources.* In addition, stormwater control offered by forestlands helps to prevent these excessive water flows that cause damaging floods, erode and deplete soil, and degrade water quality.

CLEAN AIR: Trees (and other plants) produce oxygen through a process called photosynthesis. As trees absorb sunlight, carbon dioxide (CO₂), and water they produce sugars that are used for growth and development by the tree. And as trees absorb carbon dioxide they release oxygen in return, thus cleansing the air. Did you know that one acre of forest absorbs six tons of carbon dioxide annually and puts out over four tons of oxygen? That's enough to meet the needs of 18 people annually. Trees also hold some particulate matter like dust, soil, and chemical particles that otherwise pollute air quality and can cause respiratory illnesses like asthma.

CLIMATE CONTROL: Carbon dioxide is a naturally occurring greenhouse gas which means that it helps to control the warming of the planet through a process called the **greenhouse effect**. The greenhouse effect is a critical function that regulates global climate, however, trends show that greenhouse gases in the atmosphere have increased, leading to global warming. Carbon, the essential element to all living things, is absorbed and held by trees; believe it or not Carbon makes up half the dry weight of a tree! Some scientists have nicknamed forests "carbon sinks" since they are able to absorb and hold some of that CO₂ that would otherwise be in the atmosphere. Thanks to this feature, we can rely



on trees everywhere to help prevent global warming.

They not only help with global climate regulation, they also regulate temperature for habitats and microhabitats. Trees sweeping branches and big leaves can help the forest floor, streams, and lakes stay cool thus impacting their local ecosystems.

HABITAT: As stated earlier, a habitat provides the four needs for living things: shelter, water, food, and space. Trees, whether dead or alive, provide shelter for many organisms. Some nest in their long branches, others bore holes in the side of trees. Some organisms utilize dead tree stands and make nests or dens in the hollowed out tree. Small organisms like beetles, salamanders, and flies use rotting logs and leaf litter as a safe place to lay their eggs. Trees produce nuts, fruit, and leaves that many animals eat. Some organisms can even eat the bark! Trees can grow with nooks and crannies in and around its trunk as well, which can hold water used by some animals for drinking, some for laying eggs, and others for a microhabitat!

ENJOYMENT: We all value the wooded, scenic places around the state of Rhode Island that remind us of the natural beauty we have here. Whether one is fishing on a lake surrounded by woods, hiking through a wooded path, or spending time in their backyard shaded by big oak trees, we can all appreciate the natural landscape that provides recreational opportunities and moments of reflection. Wilson Flagg, the Massachusetts born naturalist once said, “It is difficult to realize how great a part of all that is cheerful and delightful in the recollections of our own life is associated with trees.” When your students experience the forests, there will be a natural tendency to protect them so encourage experiences!

Forest Products: Forests are amazing ecosystems which have wide reaching benefits for humans and animals alike. Much of what we consume or use in our everyday life is either a direct or indirect product from forests. Take for example, your trip to school every morning. Whether you drive or take the bus (or even walk) you rely on rubber products to get there. *Tires!* Rubber is a forestry product made from the sap of the Rubber



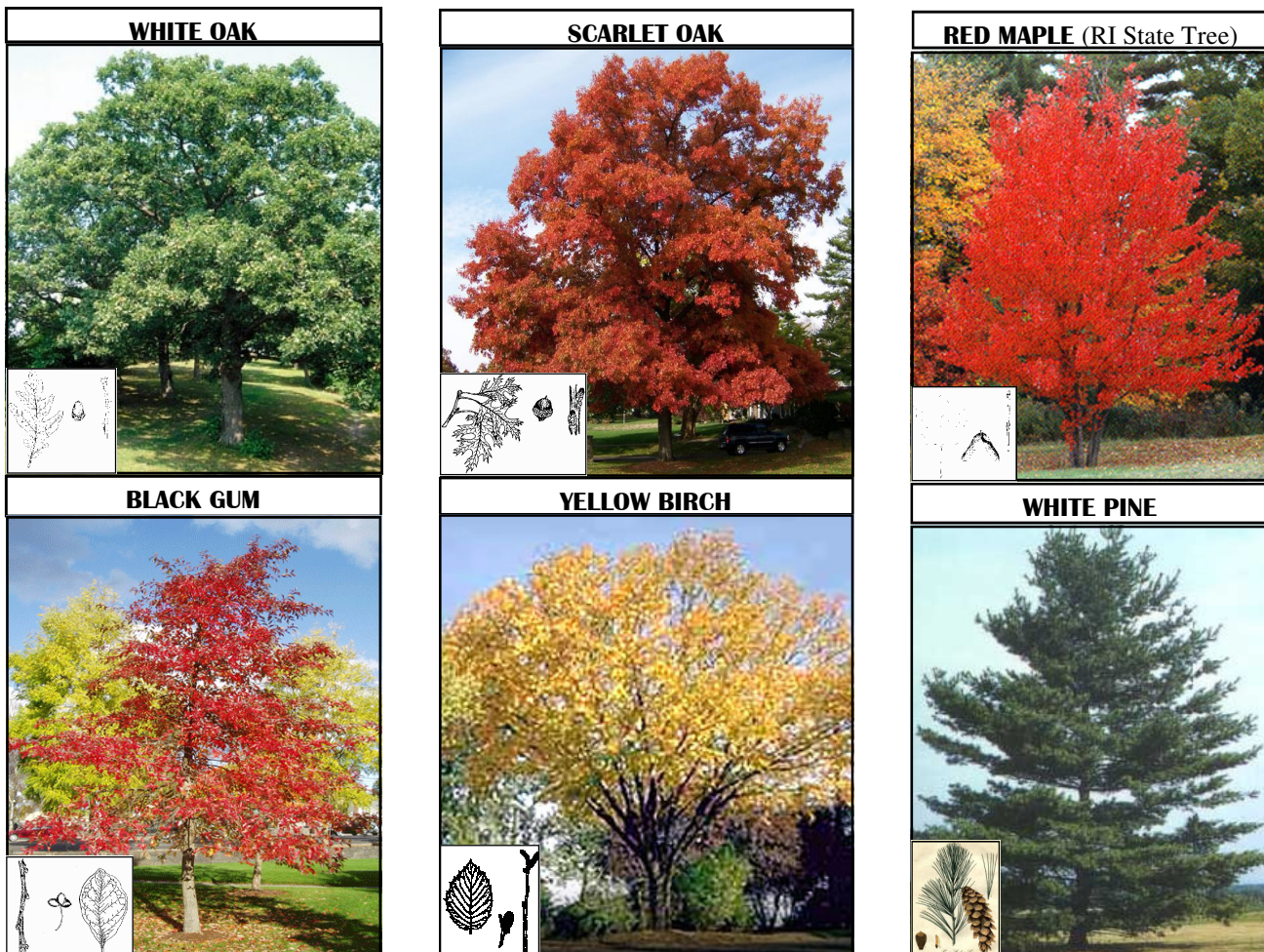
Tree; this sap is known as latex. Rubber, gum, medicine, coconuts, bananas, and of course chocolate all come from rainforests.

Rhode Island and New England's temperate forests produce many important products; much of our timber is used for wood flooring, cabinetry, building homes, boats, etc., though we also contribute to the paper industry. In RI, the leading forest product is actually firewood. Most firewood that people harvest here is considered not suitable for building because the tree did not grow straight or was damaged by pests or was already dead on the forest floor. We also contribute to forestry products that are not considered timber products, such as witchhazel, ginseng, maple syrup, mushrooms, etc. Both industries whether it be timber products or not are important to New England's economy and could not be possible without sustainable forestry management. Forestry Management benefits wildlife and the overall health of the forest. Harvesting these products from the forest can be done in a sustainable way when managed properly and forest management can contribute to forest health in a way that can outperform preservation.

Forest Wildlife

The temperate forests of New England are rich in **biodiversity** and are unique ecosystems. Diversity of forest trees and shrubs is directly correlated to diversity of wildlife. Rhode Island is home to over 50 types of native trees which allows for a wide variety of food and shelter for our wildlife. *Forestry management plays a large role in this biodiversity.* Surprisingly, major disturbances like hurricanes, fires, and timber harvests encourage biodiversity. These disturbances create new habitats that may have been absent before, such as young forests, meadows, forest-edge habitat, etc. These new habitats attract wildlife and improve over all forest health. Likewise, mature forests favor other wildlife like white-tailed deer and raccoons but are not ideal for other wildlife like bluebirds.

Lets take a look at some of the more common wildlife species of Rhode Island Forests.



WITCH HAZEL



SWEET PEPPERBUSH



CINNAMON FERN



BLUE JAY



RED-BELLIED WOODPECKER



RED-TAILED HAWK



WILD TURKEY



FISHER



CHIPMUNK



COYOTE



Photo by Dave Kenyon

NEW ENGLAND COTTONTAIL



CICADA



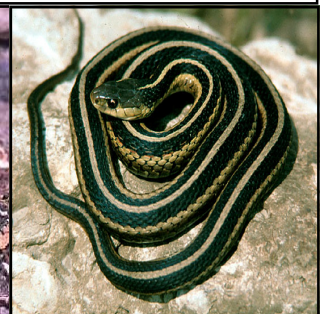
RED-BACKED SALAMANDER



WOOD FROG



GARTER SNAKE



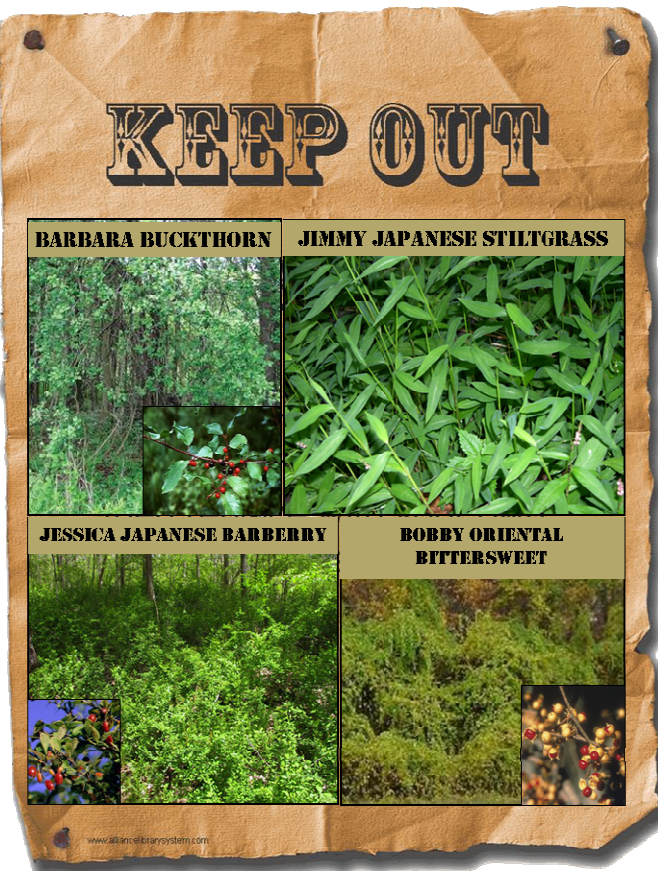
Threats to Forest Lands

Forestlands in the state of Rhode Island are overall stable and growing, however, this delicate ecosystem is challenged by continuously changing environmental and economic conditions. As our state works to expand economic opportunity, develop new housing communities, and utilize all areas of the state, our forestlands shrink. Major threats to Rhode Island woodlands include:

FRAGMENTATION: *This is the greatest threat to forestlands in Rhode Island.* Fragmentation is the division of contiguous or adjoining forestlands into smaller, disconnected patches. Fragmentation reduces the ability of forests to do their job and provide “ecosystem services” that we take for granted like stormwater control, clean water, and habitat for native wildlife. Fragmentation even effects **forest composition** and impacts local food webs and/or food chains. Since fragmented forests have less interior forest habitat it can increase the forest’s susceptibility to certain disease and the spread of invasive species.

DISEASE and PESTS: Historically, disease and pest problems have had the greatest, natural impact on Rhode Island forests over time. For example, the American chestnut tree used to be one of the most common trees in New England and was an important hardwood that bolstered our economy. In the early 1900’s a chestnut blight effectively wiped out almost all of the American chestnut trees in Rhode Island. Today, they are still a rare occurrence and have little to no impact on our timber industry in the state.

In the twenty-first century, we still face disease and pest infestations. Well known are the impacts of invasive gypsy moths, which were first identified in Rhode Island in 1901, but still pose a challenge to forests throughout the state and mostly affect White Oaks, one of RI’s most abundant trees. When gypsy moths emerge, they are incredibly abundant, but this is coupled with years of incredible scarcity. Hemlock wooly adelgid’s are also a common pest which has been attacking Eastern hemlock trees since 1985 in Rhode Island. As we look to the future, RI is threatened by Asian longhorn beetles which attack maple trees (and may impact the maple syrup industry) and the Emerald ash borer which threatens 16 species of trees in the United States.



FOREST FUN FACT

ASH TREES ARE THE PREFERRED HARDWOOD FOR MAKING BASEBALL BATS. THEY ARE A STURDY HARDWOOD, WITH LONG GRAINS, WHICH MEANS THAT BASEBALL BATS ARE STRONGER AND LESS LIKELY TO BREAK, ACCORDING TO LOUISVILLE SLUGGER®. WITH ASH TREES IN DECLINE, MANY BAT MAKING COMPANIES HAVE TURNED TO MAPLE, BUT THESE BATS BREAK EASIER AND ARE LESS PREFERRED BY MLB PLAYERS.

INVASIVE SPECIES: Of the pests mentioned above, some are native and some are invasive. **Invasive species** are the greatest growing threat to our forests. Unlike native species, invasive species do not have any natural predators or checks-and-balances in their new environment and ultimately out compete native species. *Forest fragmentation compounds this problem as it actually encourages the establishment of invasive species.* Forest wildlife suffers as a result; invasive plants can lead to food scarcity for animals, reduced space for native plants to grow, and increase the forests susceptibility to harmful disease and pest outbreaks. Common invasive plants that threaten our forests include Japanese barberry, Buckthorn, Stiltgrass, and Oriental bittersweet.

Biodiversity and Forest Management

A healthy forest, is a biodiverse forest. Sustainable forestry management aims to create diversity of habitats to ensure a forest that is productive and protected against disease, pests, and invasive species. In turn, diverse habitats attract a wide variety of plants, animals, and insects. It is this variety that allows the forest to be less-susceptible to environmental factors that may degrade the ecosystem.

Forestry practices improve biodiversity of plants and animals while simultaneously utilizing the forest for human benefit. Wildlife have many different preferences for food, shelter, sunlight, water saturation, nutrients, etc. By creating diversity of habitats through forestry management, a greater variety of wildlife are able to meet their own specific needs. Below are some forestry practices that create biodiversity:

SELECTIVE CUTTING: Selective cutting, or thinning, aids a mature forest in having diversity of tree age and thus height. This means that the forest can benefit from successional growth of small shrubs to trees to other woody plants. These plants may produce different seeds, fruits, or leaves that enhance food and shelter availability for the ecosystem. Also, different tree heights can be beneficial for many animals as some birds prefer to nest in tall trees, and some in younger or shorter trees.

SNAG CREATION: A snag is a forestry term for a standing dead tree. These snags are perfect micro-habitats for insects and birds seeking safe shelter. Woodpeckers for example create burrows in the dead tree trunk. Termites, eat away at the tree for food. A few snags here and there in a forest adds to diversity of habitats, but too many can create a fire hazard. Foresters work to balance these benefits and risks.

WILDLIFE OPENING: Wildlife openings are small clearings in the interior of a forest that allow for sunlight to penetrate down to the forest floor. This triggers competition and new growth. Plants have a wide-variety of shade tolerance, and some need full sun to grow, while others prefer the shaded forest floor. These wildlife openings allow seeds to sprout and allow growth of new trees and shrubs.

EDGE HABITAT CREATION: Edge habitat is where one habitat meets another. For our purposes, this can be where the edge of the forest meets a large field, a lake, or even your backyard garden. Edge habitat provides cover for animals that hunt in fields or for prey that is frantically looking for a place to hide from predators. It can also be a

The Story of the Red Pine

In 1926, over 2.6 million red pine tree seedlings were planted in old fields and along the Scituate Reservoir's shoreline. As these trees grew, certain areas of the watershed became monostands of red pine, with the majority of the forest being red pine stands, with very little diversity of other trees. Monostands make an ecosystem susceptible to disease and pests, since if a disease effects one tree it is likely that it will effect all the trees in that monostand. Sadly, the forest became infested with red pine scale in 1998, which is a devastating insect that effects most conifer trees. As it worked its way through Connecticut and into Rhode Island, it has killed many red pine trees it has infested. Large stands of dead trees can increase forest fire risk and cause an ecosystem collapse by destroying a wide area of habitat. To curb the damage, Providence Water embarked on an aggressive red pine harvesting program. The harvesting of this timber will allow the forest to regenerate with native species, while preventing fire and safety hazards that all those dead trees would present. The moral of the story is: Diversity is critical. If the forest had been more diverse with different types of trees, there would have been less risk associated with the pine scale, and the fear of a devastating forest fire would have been alleviated. Providence Water has continued to refine its forestry management practices as new knowledge and techniques become available.



Aerial view of the Scituate Reservoir Watershed, populated with a mix of Pine, Oak, and Maple trees

place where birds can easily find edible seeds and fruit. Some species are dependent on edge habitat while others are dependent on the dense forest interior. Either way, edge habitat is another important element of forest diversity.

LEAVE BRUSH and FOREST DEBRIS: By leaving woody debris in the forest, instead of removing it, foresters create shelter for wildlife. These brush piles are essentially loose mounds of woody debris. These are shelter havens for many ground dwelling birds or small mammals like chipmunks and mice. Constructing brush piles as opposed to removing debris from the forest, allows those resources to be utilized by the ecosystem community and to eventually break down and be added back to the nutrient cycles that fuel ecosystems.

You can protect Rhode Island's forests!

Rhode Island's forests are in good shape, especially in the Scituate Reservoir Watershed! We all positively contribute to forest health and clean water by making smart choices. Providence Water's progressive approach to forestry management has made the Scituate Reservoir is one of the cleanest drinking water sources in the country! The citizens of the Scituate Reservoir Watershed (that means you!) have made this possible by being eco-conscious and through conserving private forestlands. Still, we can all continue to make the right choices to preserve the forests and high drinking water quality for generations to come.

YOU CAN PROTECT RHODE ISLAND FORESTS !

- ➔ **EDUCATE OTHERS** – Tell your family and friends what you've learned about Rhode Island forests. Knowledge is half the battle!
- ➔ **PLANT A TREE** – Show your support for the environment, add to the forest habitat, help prevent erosion, clean water, slow stormwater, and much more. One tree makes a difference!
- ➔ **DIVERSIFY YOUR FAMILIES GARDENS AND TREES** – Diversity breeds sustainability; by diversifying your landscape with native plants you reduce the local forest ecosystem's susceptibility to pests, disease, and invasive plants.
- ➔ **ENJOY YOUR LOCAL FORESTS** – By using hiking trails and public parks, you demonstrate to your town that you value the conservation of forestlands and you will grow in your passion to protect these valuable resources.
- ➔ **ONLY USE LOCAL FIREWOOD** – DO NOT bring firewood to other states and vice versa; this helps to reduce the risk of spreading invasive pests that harm our forests.
- ➔ **PRACTICE FORESTRY MANAGEMENT** – If your family has forestlands, encourage active management of your forests which benefits both people and wildlife.
- ➔ **USE RENEWABLE PRODUCTS** – Trees provide a renewable, sustainable resource, and using wood or paper products in place of finite resources or fossil fuels is a step in the right direction.

FOREST FUN FACT

IN 1605, THE BRITISH ROYAL NAVY DECLARED EASTERN WHITE PINES A NATIONAL TREASURE AND RESERVED ALL WHITE PINES FOR BRITISH SHIP MASTS.

➔ **ALWAYS RECYCLE** – Recycling paper products allows forest-based industry to use some recycled material in making new products and creates conditions for a more sustainable future.

➔ **THANK A FOREST LANDOWNER** – Work by yourself or with your classroom to show a local forester that you appreciate all they do to conserve our working forests. *Send your letter to Scituate Reservoir Watershed Education Program by February 1, 2011 and we will use the letter in our campaign to encourage local forest landowners to "Keep our Forests, Forest!"*

Vocabulary

Biome—a major regional or global biotic community characterized by the dominant vegetation and general climate; includes desert, grassland, forest, etc. RI is part of the temperate forest biome.

Biodiversity—is the degree of variation of life forms within a certain habitat, ecosystem, or biome; is one measure of ecosystem health

Coniferous Trees—trees that bare cones such as Pine, Hemlock, Fir, Redwood, etc.

Deciduous Trees—trees that drop their leaves seasonally such as Oak, Maple, Hickory, Sassafras, etc.

Ecosystem—an interconnected, biological community of plants and animals and includes non-living components such as sunlight, air, water, and soil

Ecosystem Services—Inherent benefits that ecosystems provide to human society such as clean water & air, soil protection, flood control, climate control, biodiversity, etc.

Erosion— the process by which rain, wind, and/or ice weather natural surfaces, like Earth's crust or rock, and transports those materials to a new location

Forest Composition—a combination of the variety and predominant vegetation in the forest, the various stages of growth of the forest vegetation and thus the various heights and layers that form the forest environment

Greenhouse Effect—A natural occurring process that aids in heating Earth's surface due to certain atmospheric gases like carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and water vapor (H₂O), that trap the Sun's heat.

Groundwater—water located beneath the earth's surface in soil pore space and in rock fractures; groundwater is recharged by rain that seeps through the ground

Habitat—an area of land that is inhabited by a particular type of animal, plant, or other organism

Impervious surface—a surface that water is unable to percolate through; these are mostly man-made surfaces like roads, rooftops, driveways, sidewalks, etc.

Invasive species—a non-native or exotic plant that outcompetes native vegetation, may become the prevalent vegetation type, and negatively impacts the local environment

Microhabitat—a small localized habitat within a larger ecosystem such as a rotting log

Non-point Source Pollution—water pollution that comes from many diffuse sources, that are difficult to pinpoint the location and quantity of pollution coming from those surfaces, i.e. agricultural runoff, pet waste, pesticide and fertilizer from residential lawns, leaking septic systems, etc.

Stormwater Runoff—excess rain water that is not able to filter through the ground due to impervious surfaces and instead washes off the lands surface directly into nearby storm drains and waterbodies; this runoff tends to carry harmful pollutants that can deter water quality

Surface Water—Water that is at Earth's surface such as lakes, ponds, rivers, Narraganset Bay, etc.

Taiga Forest—a type of forest biome characterized by the predominant vegetation of coniferous trees

Temperate Forest—a type of forest biome characterized by a mix of deciduous and coniferous trees and a climate pattern of four distinct seasons

Tropical Forests—a type of forest biome characterized by wet and dry seasons; this biome also boasts the greatest amount of biodiversity for any biome and/or ecosystem in the world

Watershed—1)an area of land that water passes over or under on its way to another body of water; 2)the area of land that water flows across or under on its way to a stream, river, or lake.

Tips on Creating a GREAT Poster



Attracts attention: Try using colors and white space to get and hold people’s attention. Use letters that are large enough to be read easily



Be simple and clear: Don’t try to include everything that you know. Focus on one point that you would like to emphasize



Balance your poster: Don’t create a poster that is all words or all pictures. The most effective poster will have a good mix of both with a clear message



Sketch out your idea: Before starting your poster, have a brainstorming session. Make decisions about what information you want to include and what you want to bring out in your poster. This will help you choose a theme or topic. If you have time, try sketching out your poster idea first.

Additional Resources

1. *Real Trees 4 Kids* is an interactive website run by the National Christmas Tree Association and offers activities, lessons, and games for grades K-12. www.realtrees4kids.org
2. *Temperate Forest Foundation* provides information that touches on a broad set of forestry topics from simple Fun Facts to Forestry Management. www.forestinfo.org/Discover
3. *Green Facts* is an internet encyclopedia on environmental topics, including forestry, and is a better resource for middle school students. <http://www.greenfacts.org/en/forests/index.htm>
4. *Oklahoma Forestry Services* has a fun kids page that is user-friendly and has fun games you can print out and share with your classroom. <http://www.forestry.ok.gov/for-kids>
5. *Providence Water Supply Board* provides information on the past, present, and future of forestry management in the Scituate Reservoir Watershed. www.ProvWater.com
6. *Project Learning Tree* is a website designed to assist teachers with forestry curriculum by providing a plethora of information and activities that utilize critical thinking skills. www.PLT.org

Scituate Reservoir Watershed Education Program is a partnership between:
Providence Water & **Northern RI Conservation District**

International Year of the Forest Partners: RI Department of Environmental Management—Division of Forest Environment; RI Forest Conservators Organization; RI Rural Development Council; RI Resource Conservation & Development Council; RI Tree Farm Program; USDA-Natural Resources Conservation Service; Society of American Foresters
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ATTENTION TEACHERS

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If you are interested in participating in PLT training, please contact Elizabeth Berg at Elizabethn-Berg@nricd.necoxmail.com or (401) 949.1480.