

Community Wildlife Conservation Guide: Implementing Rhode Island's Wildlife Action Plan in Your Community



*A Guide for Rhode Island Communities, Conservation Groups, and Citizens
Working to Protect Wildlife for the Health of Our Communities and Future Generations*

"Nature is not a place to visit. It is home."

~ Gary Snyder



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Spotted turtle (*Clemmys guttata*), photo by C. Raithe

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Preface: Our Wildlife Inheritance

As Rhode Islanders we value fish and wildlife for many reasons, from the aesthetic to the practical. Wildlife and wild places can teach us lessons about ourselves and about the world around us. They can reconnect and refresh us with their natural beauty and provide us with food and other necessities, as well as opportunities for recreation. Regardless of whether we live in the city, the suburbs, or in more rural parts of the state, all of us depend on healthy forests, wetlands and other natural areas for clean air and water. Wildlife and wild places are at the very heart of our natural and cultural heritage.



Cecropia Moth (*Hyalophora cecropia*), photo by R. Enser

Rhode Island's fish and wildlife is remarkably diverse, considering that it is the smallest and the second most densely populated state. Rhode Island supports almost 900 vertebrate fish and wildlife species, an estimated 20,000 invertebrates, and over 1300 native plants. Yet as development continues to spread into rural areas, there are precious few wild places left for plants and animals to thrive.

The loss of wild places breaks our connection to nature. Future generations need wild places to understand the relationships between people and wild plants and animals, to understand that the needs of wildlife can be very different from our imaginings of their needs from books or zoos.

How do we reverse this trend, recover our connection to the land, and renew our relationships with nature? How do we ensure that our communities and wild places thrive in tandem and in perpetuity, fully supporting our collective well-being?

The Rhode Island Wildlife Action Plan (RI WAP) is a major step in answering these questions. RI WAP has identified habitat loss and degradation from human population growth and its associated impacts as the primary threats to wildlife and natural places. Additionally, the RI WAP prescribes a series of actions for the next ten years that can be taken by State and Federal agencies, nonprofit conservation groups, local planning boards and land trusts, and individuals seeking ways to help conserve wildlife.

This plan must be more than a book on a shelf if future Rhode Islanders are to be able to enjoy the same amazing creatures and natural places that we do today. If conservation is to be successful, all Rhode Islanders must understand their stake and make efforts in their own ways and within their own capacities to safeguard our precious natural heritage. The simple truth is that laws alone will not secure a future for the vast majority of Rhode Island's plants and animals. That power lies in the hands of its residents, and this *Community Wildlife Conservation Guide* is a great way to get started!

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Harbor Seals (*Phoca vitulina*), photo by USFWS

Purpose of this Guide and How to Use It

“Of what avail are forty freedoms without a blank spot on the map?”
~ Aldo Leopold

The RI WAP serves as a blueprint to help fulfill our responsibility to conserve wildlife and the places they live for future generations. To make the plan accessible to all audiences, The Rhode Island Chapter of The Nature Conservancy, the Rhode Island Natural History Survey (RINHS), and the University of Rhode Island (URI) have collaborated with RI DEM to leverage financial resources, provide technical assistance and staff expertise, and promote participation by municipalities and other community interests in the development and implementation of the 2015 RI WAP. This guide is one of the products of that collaboration, its aim to make wildlife conservation more accessible to a broad audience.

The *Community Wildlife Conservation Guide* explains where to find information about vulnerable fish and wildlife and natural areas and what can be done to keep them a healthy part of our communities. It also recognizes the need to prepare for the uncertainty of a changing landscape and climate by offering a big picture perspective. As such, this guide can serve as a toolbox from which to select conservation techniques that are appropriate for a set of needs at any given scale. The toolbox includes brief descriptions of specific conservation tools and references to further information in the full RI WAP and elsewhere.

Specifically, this guide:

- Explains how wildlife conservation and human interests are inextricably linked;
- Provides information on local and regional fish and wildlife species and habitats;
- Provides an understanding of these resources at the local level as well as their regional significance;
- Helps establish goals and strategies at all scales for protecting and conserving these resources;
- Provides guidance for conserving the important fish and wildlife habitats of Rhode Island through local and regional conservation planning and land stewardship;
- Provides links to appropriate sections of the full RI WAP for additional information; and
- Provides contact information for the [RI WAP Community Liaison](#), who is available to provide technical assistance and serve as a link to other conservation professionals.

The RI WAP compliments other conservation plans that have been prepared by State and Federal agencies, conservation groups, and other partnering organizations. As well, the revised action plan recognizes new and increased threats facing wildlife in Rhode Island and provides guidance for addressing these threats that may be adopted by other plans.

Rather than summarizing the RI WAP, this companion guide provides a framework and more specific tools for its implementation. The execution of specific conservation actions is dependent upon budgets, opportunities, local priorities, and a host of other factors. This guide can help all agencies, groups, and individual conservationists decide which actions they can most effectively and efficiently implement. It provides multiple paths forward toward a future with a still-rich natural heritage for Rhode Islanders.



Photo by J. Osenkowski

CHAPTER 1 - WILDLIFE CONSERVATION IN RHODE ISLAND

A Closer Look at the RI Wildlife Action Plan

“Never, no, never did Nature say one thing and Wisdom say another.”
~Edmund Burke

The Evolution of Wildlife Conservation and Charting the Course for the Next Decade

Although the public and government had identified a national need to protect wildlife species suffering from overhunting and habitat degradation as early as the turn of the 20th century, it wasn't until 2000 that Congress created the State Wildlife Grants (SWG) Program to fund the conservation of declining species beyond those considered typical hunting or fishing quarry or listed as threatened or endangered. To ensure that states would use their SWG funding effectively, Congress mandated that each state submit a Wildlife Action Plan (WAP) and update that plan no less than every ten years in order to be eligible for program funding.

The RI WAP was initially written in 2005 as the Rhode Island Comprehensive Wildlife Conservation Strategy (CWCS). The 2015 revision has been improved by the research and inventory efforts identified in the 2005 plan and conducted during the intervening ten years, and it remains the most comprehensive document addressing the goals of fish and wildlife conservation in Rhode Island. It is a long-range plan that assesses the health of the state's wildlife and habitats, identifies the threats they face, and outlines actions to address these threats.

Rhode Island's Species of Greatest Conservation Need and Their Key Habitats

The [framework](#) of the RI WAP provides the following:

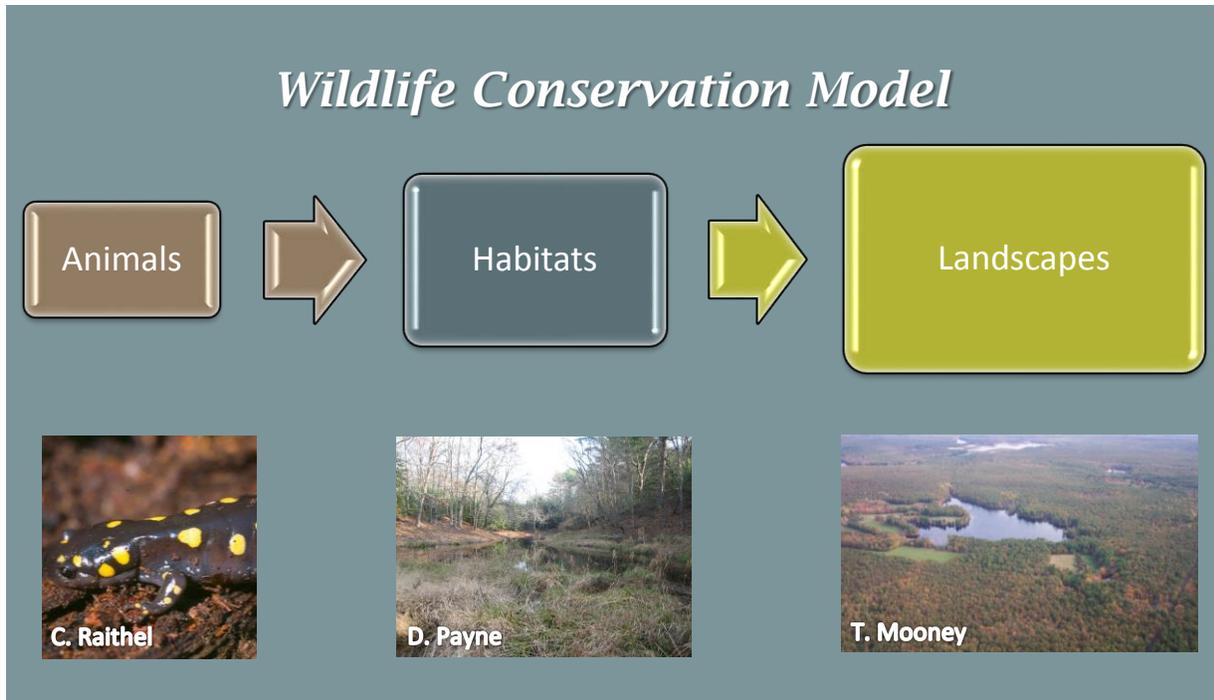
- (1) Distribution and abundance of wildlife species of greatest conservation need (SGCN);
- (2) Extent and condition of key habitats essential to the conservation of these species;
- (3) The threats these species and habitats face and the research and survey efforts needed to better understand these threats; and
- (4) The key conservation actions to address these threats and conserve species and habitats.

The RI WAP acknowledges that conservation of our fish and wildlife heritage requires more than the cataloging of rare species. Natural systems are complicated, and a holistic approach is necessary in order to insure that all species are conserved. This concept is not new, but was stated by Aldo Leopold in his seminal work, *Sand County Almanac*, published in 1949:

“The outstanding scientific discovery of the twentieth century is not television, or radio, but rather the complexity of the land organism. Only those who know the most about it can appreciate how little we know about it. The last word in ignorance is the man who says of an animal or plant: “What good is it?” If the land mechanism as a whole is good, then every part is good, whether we understand it or not. If the biota, in the course of aeons, has built something we like but do not understand, then who but a fool would discard seemingly useless parts? To keep every cog and wheel is the first precaution of intelligent tinkering.”
~ Aldo Leopold

RI WAP recognizes this multi-faceted approach with a comprehensive methodology that looks not only at what is known about individual species, but also the commonalities and/or relationships among species. Rhode Island experts accomplished this task by identifying focal species that are representative

of larger groups of species, or guilds. In this way, conservation actions developed for these focal species and their habitats also provide for the needs of all species that utilize the same habitats. The exact selection criteria used to generate the final SGCN list can be found in [Chapter 1 of the RI WAP](#) document along with the full list of SGCN species and key habitats.



Wildlife Conservation Model. *One of the best ways to help plants and animals adjust to changing conditions is to provide them with sufficient room to move. Because few species fulfill all of their lifecycle requirements in a single habitat, and since different species require different combinations of habitat to thrive, we need to look even more broadly to the mosaic of habitats that make up our landscapes in order to protect the greatest diversity of wildlife. Safeguarding large tracts of diverse undeveloped land is an important complementary strategy to protecting the areas where SGCN wildlife currently reside.*

CHAPTER 2 - WHY IT'S IMPORTANT TO KEEP RHODE ISLAND WILD

"The truth is: the natural world is changing. And we are totally dependent on that world. It provides our food, water and air. It is the most precious thing we have and we need to defend it."

~ David Attenborough

WHAT WE STAND TO LOSE AND WHY IT MATTERS:

The Ecological, Economic, and Social Values of Rhode Island's Natural Resources

Sense of Place

Many Rhode Islanders have a strong affiliation to their communities, each one distinguished by its own particular social and historical character and connections to the natural world. These unique elements provide strong and positive sensory experiences that create lasting emotional ties and a sense of belonging. While the architecture of Providence and Newport are examples of this sense of place from a cultural and historic perspective, the beautiful beaches of South County and Block Island, extensive wetlands of the Wood-Pawcatuck River watershed, rolling forests of western Rhode Island, and farmland of Newport and Washington Counties are examples of the natural features that make Rhode Island so special.

The state's 1,054 square miles contain almost 100 natural vegetation community types that support a broad spectrum of fish and wildlife species, including many rare and endangered plants and animals. Whether it's the birds and butterflies that inhabit our gardens and parks, or harbor seals basking on off-shore rock outcrops, all Rhode Island's species contribute to a unique sense of place that is recognized and valued by residents and tourists alike.



Black-throated blue warbler (*Setophaga caerulescens*), photo by J. Osenkowski

Outdoor Recreation and Tourism

Wildlife is part of the culture of Rhode Island and wildlife recreation is a cornerstone of its conservation ethic and natural resource management. The state's fish and wildlife contribute a varied and renewable resource of economic value to the state and nation. Generations of Rhode Islanders and tourists have enjoyed fishing, hunting, botanizing, birding, whale watching, clamming, and countless other outdoor pursuits within the state's borders. Migrating and wintering waterfowl, neo-tropical migrant birds, butterflies, dragonflies, fish, and rare plants attract residents and eco-tourists to

five US Fish and Wildlife Service (USFWS) wildlife refuges, 24 State Management Areas (SMAs), 22 Nature Conservancy preserves, and 10 Audubon Society of Rhode Island (ASRI) wildlife refuges. RI DEM maintains 30 parks and management areas that draw six million visitors each year, generating \$1.7 billion in revenues to the state's economy (RI DEM 2003a).

According to the *2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation* (USFWS 2013), approximately 402,000 residents and nonresidents ages 16 and older participated in wildlife-related recreation (hunting, fishing, and wildlife-watching) in Rhode Island in 2011, spending an estimated \$360 million. These numbers do not include commercial fishermen or others who rely on Rhode Island's natural resources for their livelihoods. They do include the approximate 308,000 residents and nonresidents who spent \$200 million on wildlife-watching alone¹. The study also revealed that approximately 36% of Rhode Islanders participated in some form of wildlife-related recreation in that same year.

Rhode Island's Fishing Industry

A 2011 calculation of the commercial value of Rhode Island's fisheries to the state's economy, based on an econometric model developed by the National Marine Fisheries Service, estimated 2010 total sales at \$150.4 million, total income at \$106.4 million, and total employment at 4,968. These estimates don't include revenue from fish caught out-of-state by Rhode Island home-ported vessels or shipped into the state for processing and distribution. The future of the fishing industry depends on safeguarding our fresh and coastal waters and their surrounding habitats by considering how our land use, energy and transportation decisions impact these resources.

Healthy Citizens, Healthy Places

Natural areas are essential for maintaining clean air and water. It is impossible to put a precise dollar value on forests that replenish oxygen and cleanse the air; healthy, productive soils; wetlands that remove toxins from the water and absorb runoff; or wildlife species that control agricultural pests, disperse seed, recycle nutrients and pollinate plants.

For more information on Rhode Island's physical and natural resources, please refer to [Chapter 2](#) of the 2015 RI WAP.



Block Island coastal shrubland and dunes, photo by A. Freitas

¹ These details for participation do not add to the total because approximately one quarter of the participants participated in more than one wildlife-related activity.

WHY WILDLIFE NEEDS OUR HELP

“Quality of life is not an automatic byproduct of the free market. You don’t just get it. You have to plan for it. You have to care for it.”
 ~ Harriet Tregoning, Smart Growth Leadership Institute Executive Director

The RI WAP identifies threats to the state’s fish and wildlife species and their habitats with some of the most significant threats recurring across taxa and landscapes.

Key Threats and Percent of SGCN and Key Habitats Affected

Threat	SGCN	Key habitats
1. Residential and commercial development	50%	52%
2. Invasive and other problematic species and genes	38%	97%
3. Climate change, including severe weather impacts and habitat shifting and alteration	34%	41%
4. Natural systems modifications such as dams, fire suppression, and water management/use	33%	33%
5. Pollution such as household sewage, stormwater contaminants, and erosion	44%	29%
6. Transportation and service corridors	24%	31%
7. Human intrusions and disturbance	28%	22%
8. Biological resource use such as overharvesting and collection	37%	2%

Ultimately, all of these threats are linked to the growing conflict between people and wildlife. There is only so much land; as human populations and per capita consumption rise, there is little room left for wildlife.

Historic Land Use Trends

Populations of native plants and animals are governed by the extent and quality of their habitats, and land use since European settlement circa 1600 has resulted in considerable alterations to Rhode Island’s landscape. Prior to settlement at least 95% of the state was forested; by the mid-1800s nearly 80% of that forest had been removed for lumber and firewood or agricultural purposes (Butler and Wharton 2002). With the Industrial Revolution large tracts of farmland were abandoned as workers concentrated in urban centers. Reforestation peaked in the mid-1950s at roughly 65%. However, residential and commercial sprawl has resulted in a steady drop to about 50%, and much of the remaining forest is fragmented into small blocks of less than 100 acres by roads and other man-made features.

Drastic alterations in the extent of certain habitat types resulted in many plants and animals undergoing sudden population fluctuations. Forest species declined and in some cases disappeared during the peak of agriculture, while species that favor open grasslands increased. Today, all natural habitats are in decline mostly because of the continuing spread of development. Developed lands and urban areas do provide habitat for a considerable number of native species, but not the higher diversity that would have been found prior to development. Forests and coastal wetlands have suffered the greatest. According to best estimates, at least 50% of the original salt marshes in Rhode Island have been filled, dredged, built on, culverted, or used as landfills.

The 19th century had also witnessed precipitous declines in wildlife abundance from unrestrained market hunting for food, furs, and feathers. It wasn't until the beginning of the 20th century that people began to rethink the notion that the land and its natural resources were inexhaustible.

Pollution of the state's waterways that accompanied the Industrial Revolution has been curtailed through environmental regulations, but the legacy of pollution remains in the toxic substances held in the sediments of the state's major rivers. Further, the more recent pattern of urban sprawl that has resulted in the conversion of forests and fields to houses, lawns, roads and driveways has resulted in an influx of fertilizers, herbicides, sediments and a host of other pollutants into these areas and especially into nearby waters. It has also opened the floodgates for a long list of invasive plants and animals that threaten to displace important native species. Even areas that remain undeveloped are at risk of being degraded by increased access to these previously remote locations.

Regulatory and Practical Barriers

Most of Rhode Island's land is privately owned. The state is the second most densely populated in the country, and human impacts can be even greater during the summer, especially in coastal areas. Most, if not all, of the issues facing wildlife in Rhode Island can be traced to habitat loss or fragmentation resulting from increasing human pressures. Yet there are no provisions to protect habitat even for rare species in the RI General Laws. The RI Endangered Species Act ([RIGL Title 20; Ch. 37](#)) protects listed species from trafficking, sale or collection. The [Rules and Regulations regarding Enforcement of the Freshwater Wetlands Act](#) do address rare species and rare wetland types, but these regulations only apply within jurisdictional wetlands and fall short of disallowing significant impacts to rare species even within this jurisdiction. Migratory birds and endangered species are considered federal "trust" species, but there is little regulatory authority to protect most other wildlife species.



Blackstone Park, Providence, photo by Jeanine Silversmith of RI Families in Nature

Better Land Use Strategies Are Needed

It is important to think about how development should fit into our landscapes and be an appropriate fit for the communities and spaces we envision for ourselves. Conventional zoning and subdivision regulations in Rhode Island, originally adopted to protect natural resources, open space, and community character, have by and large had the opposite effect. Large lot subdivisions and poorly planned

developments in rural and suburban towns have encouraged outward growth into formerly wild areas. Outward growth requires roads, which fragment remaining open spaces. Rhode Island already has over 13,500 lane-miles of road. Not only does this pattern of development erode communities and rural character, but habitat fragmentation is a major problem for fish and wildlife species as well. The public is well aware of deer strikes on roads because of their size; it's much easier to miss the far more devastating impacts to a host of smaller species. Turtles, for example, are long-lived and have few young; their populations can't sustain the loss of adults from vehicle strikes, increased predation, and other threats that accompany human encroachment into their habitats.

The Healthy Environment-Healthy Economy Connection

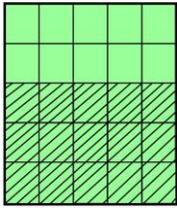
Development is often presented to be the best use of land, and economic development scenarios are often depicted as a choice between jobs and the environment. Usually such arguments are false constructs that seem to make sense only if one focuses on short-term benefits (jobs, tax revenue), and undervalues or dismisses the [benefits of open space](#) and the long-term costs associated with development (additional infrastructure, public services). Helping people understand that protecting our land, air, and water is a win-win is the best way to achieve all of our goals together.

Climate Change

Many species of plants and animals are threatened by the impacts of a changing climate. Warming temperatures, more frequent droughts coupled with heavy rain events, and less snow cover will require some species to either adapt to new conditions or disperse to more suitable areas. Some changes are already taking place. In many parts of coastal Rhode Island, sea level rise has begun to drown salt marshes and small islands. The flora in non-coastal areas is changing as well, with some of our more northern species losing the ability to reproduce from seed and more southerly species increasing in numbers and sometimes becoming invasive. While some species will be able to move rapidly and adapt, others may be lost entirely. Decisions made in isolation as land becomes available or as disasters occur do not favor a long-range approach. Fortunately, tools are available to help towns plan for these additional challenges to the natural infrastructure of our communities and the plants and wildlife that occupy these threatened areas. See [Chapter 4](#) tools.

The Danger of Not Seeing

You may live in a neighborhood with small patches of forest nearby. You may see birds at your feeders and deer, skunks, and other wildlife crossing through your yard. You may wonder "Just how important can all of this be when there seems to be plenty of wildlife?" While it is encouraging that some species are so adaptable, these same species can give us a false sense of security about the welfare of wildlife as a whole. To understand the urgency of the situation, it's important to recognize that there are numerous animals that are well-accustomed to life in close proximity to people. Skunks, robins, raccoons, and red fox, for example, are all able to live in densely populated cities. Conversely, there are many species that do not do well around people and need large, unspoiled habitats to thrive.



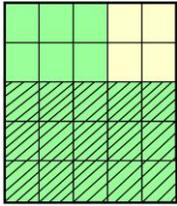
Scenario 1 depicts two area sensitive forest species whose territories overlap (Species A's territory is the entire cube (green) and Species B's territory is the cross-hatched portion).



Northern Goshawk
(*Accipiter gentilis*)



Ruffed Grouse
(*Bonasa umbellus*)



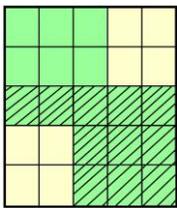
There has been the insertion of a clearing (yellow), which would allow inroads of an edge species (Species C). In scenario 2, the larger territory (green) has been reduced and is no longer sufficient to support Species A.



Ruffed Grouse
(*Bonasa umbellus*)



Chipping Sparrow
(*Spizella passerina*)



In scenario 3, a second clearing has created additional edge habitat and the cross-hatched territory of Species B is now also compromised.



Chipping Sparrow
(*Spizella passerina*)



Chipping Sparrow
(*Spizella passerina*)

Fragmentation Impacts: *Three scenarios demonstrating the impact of fragmentation.*

Photos: USFWS Karen Laubenstein (Northern Goshawk), Paul L'Etoil (Ruffed Grouse), USFWS (Chipping Sparrow)

The RI WAP aims to protect more sensitive species and generalists alike, and both are necessary to preserve Rhode Island's unique natural heritage. Yet without a change in course that promotes a long-range, landscape-scale planning approach, we will most certainly be left with only the latter.

"Sprawl is neither the ordained nor the inevitable outcome upon the New England landscape."

~ from "Model State Land Use Legislation for New England"

TURNING THE TIDE (How Local Conservation Helps)

Rhode Island has what can be referred to as a reciprocal land use planning system. Whereas the State Guide Plan establishes overarching long-range goals and policies, municipalities must set their individual long-range priorities via community comprehensive plans. **These plans must be reviewed and approved by the State to ensure consistency with the [Rhode Island Comprehensive Planning and Land Use Act](#) and State Guide Plan.** Conversely, once municipal comprehensive plans are approved, State agencies must ensure that their programs and projects are consistent with them. Conservation planning varies at the local level according to local priorities and assets.

For conservation at the municipal and regional scale, conservation planning needs to be institutionalized so that a community's open spaces and wildlife habitat is not undermined project by project. Proactive wildlife conservation at any scale (1) identifies rare and vulnerable species and (2) works to keep common species common.

It is very important to note that neither RI WAP nor this guidance is regulatory. It is equally important to remember that the regulatory frameworks that currently exist for protecting wildlife in Rhode Island are inadequate, and that this lack of regulatory authority at the state level makes proactive, collaborative conservation to protect all wildlife at the local level even more imperative.

RI WAP is an opportunity to chart a collaborative course to achieve meaningful wildlife conservation. Municipalities, land trusts and other local stewards play vital roles in protecting wildlife and wild places. Each municipality and conservation group is different, and local governments and organizations are uniquely equipped to be able to understand and communicate local goals. Local goals can be meshed with those that simultaneously promote wildlife, public health, and community character. The set of tools at the end of this guide is not a one-size-fits-all approach and can be used in any combination or order. The actions in the guide can be scaled up or down to accommodate the mission and goals of individuals and groups. For instance, it provides guidance for landowners interested in managing their property for New England Cottontail as well as regional planners who want to collaborate to save enough habitat for this species to thrive and ensure habitat connectivity throughout its Northeast range.



New England Cottontail (*Sylvilagus transitionalis*), photo by B. Tefft

CHAPTER 3 - HOW CONSERVATION CAN HAPPEN IN YOUR COMMUNITY

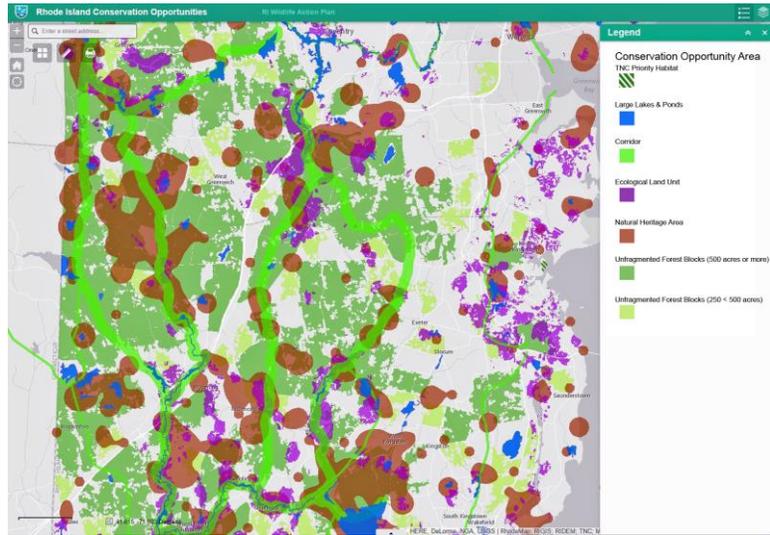
Applying RI WAP at All Scales

“It would be worth the while if in each town there were a committee appointed to see that the beauty of the town received no detriment...”

~ Thoreau

CONSERVATION OPPORTUNITY AREAS: Room to Move on a Changing Landscape

For many years conservation of biodiversity has focused on the most vulnerable and rarest species and small specialized habitats. The RI WAP further challenges us to consider species that are still common and widespread but exist in habitats that are vulnerable to human impacts. Complementary strategies are necessary, so the RI WAP lists both SGCN wildlife and key habitats. It adds a coarse filter/broad scale approach to evaluate conservation opportunities in the state and region to see how Rhode Island contributes to overall biodiversity conservation. One of the products of this effort has been the identification of statewide **Conservation Opportunity Areas**.



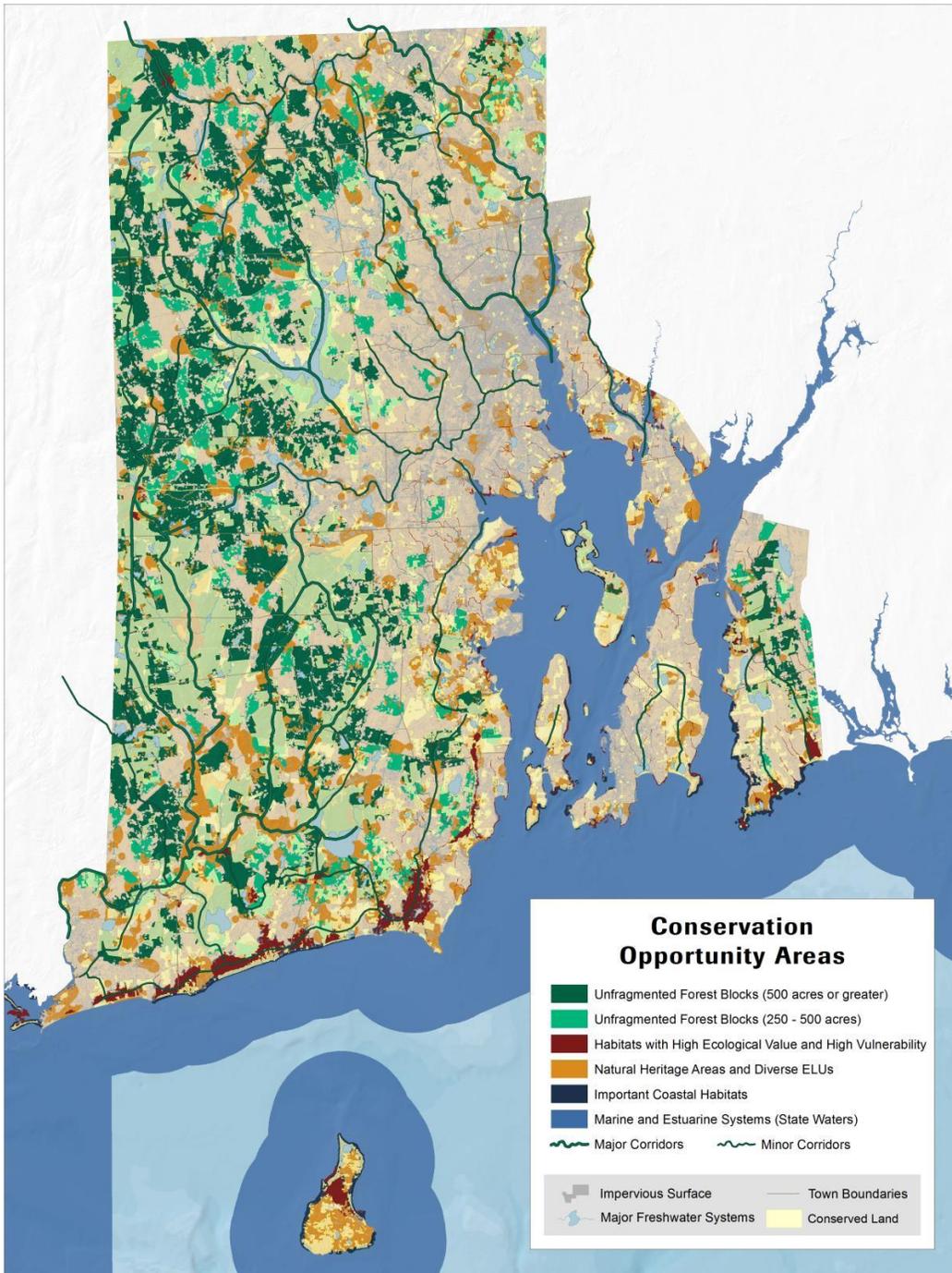
RI DEM Interactive Conservation Opportunity Areas Map

<http://ridemgis.maps.arcgis.com/apps/webappviewer/index.html?id=63f3ef956b3e4711ab3f8dd8349f346e>

COAs include Core Natural Areas, Sites, and Corridors

Conservation Opportunity Areas (COAs) are identified in RI WAP as critical to safeguard Rhode Island’s full suite of key species and habitats. COAs are composed of three elements that, taken together, provide wildlife with sufficient room to move within and among suitable habitats. COAs are an important addition to a suite of mapping tools that continues to evolve with new and more specific information.

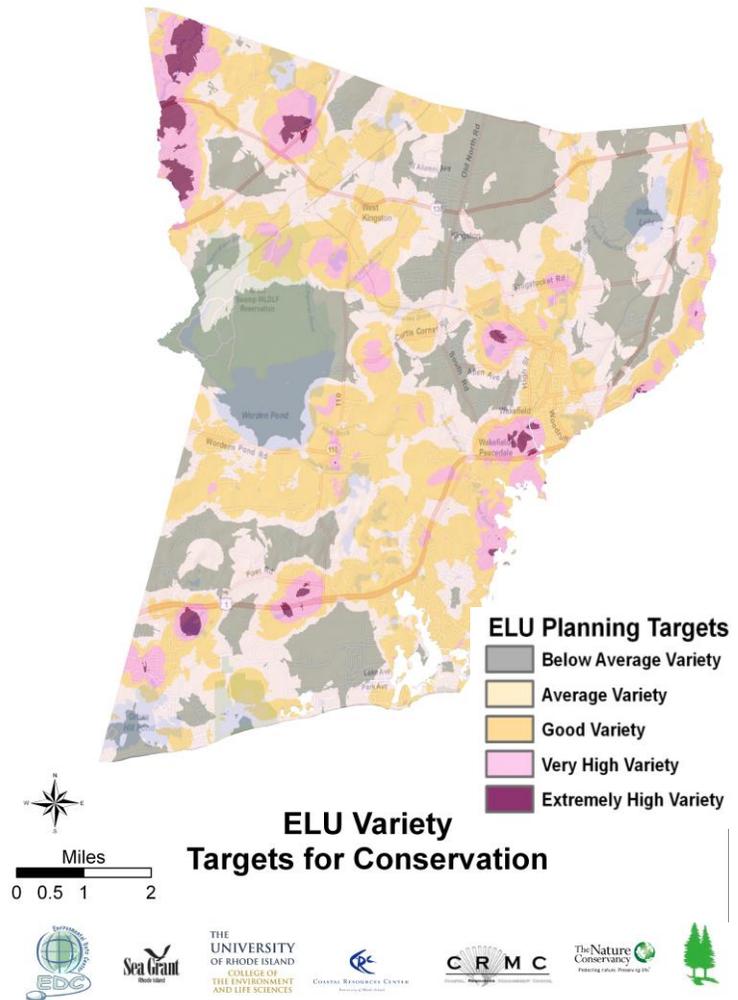
Core Natural Areas are large undeveloped habitat patches that do not contain roads and are targeted for land preservation and creative land use techniques that minimize fragmentation (Refer to [Chapter 4](#), Sections 1 and 2 for tools communities can use to protect habitat). Decision makers are urged to conserve the largest blocks of undeveloped land within their communities but should also consult with neighboring communities when identifying COAs and seeking assistance to conserve pieces they couldn’t on their own.



RI WAP Conservation Opportunity Areas Map

Sites are smaller areas that have unique values deserving protection. Sites contain specialized habitats, rare species, wetlands, sensitive surface waters, or other features that communities should protect. Sites also contain high variety Ecological Land Units (ELUs). ELUs assess the physical diversity of the landscape as a surrogate for biological diversity. ELUs are an important consideration because sufficient biological information is often lacking. ELUs also take climate change into account because diverse areas are typically more resilient than the surrounding landscape. While we can't know what species will occupy these areas in the future, we can assume that they will continue to support a diversity of species even as the climate changes.

Corridors are pieces of land that spatially connect Core Natural Areas and Sites. Corridors often follow rivers, particularly in more urban areas, but may also be wetlands or other undeveloped lands between larger undeveloped blocks or other important habitats. In order to thrive, wildlife must be able to move freely between undeveloped lands and across political boundaries. This “room to move” is particularly important given the uncertainties of climate change on future habitat conditions. Fish and wildlife rely on habitat connectivity to find scarce resources, preserve gene flow, and locate alternatives to lost habitat. Connectivity is vital to maintaining plant and animal diversity, so identifying corridors is critical.



Ecological Land Unit Map of South Kingston
 Map courtesy of URI Environmental Data Center (EDC):
www.edc.uri.edu/elu/default.html

WE ALL HAVE A RESPONSIBILITY AND A ROLE TO PLAY

"I change myself, I change the world." - Gloria Anzaldua

Urban communities that are generally outside the boundaries of COAs still contain patches of open space that provide critical habitat for local fish and wildlife. Urban greenspaces such as Blackstone Park, Swan Point Cemetery, and the Woonasquatucket River Greenway in Providence serve as vital stopover areas for migrating songbirds and provide an important connection to nature for urban residents as well. Along with protected parks, cemeteries and stream corridors, similar habitat opportunities can be found at recreational areas, undeveloped wetlands, and vacant lots to be restored.

RI WAP is a guide plan for everyone. We all make daily decisions that affect local fish and wildlife and natural places, and we need everyone's participation if we are to succeed at protecting them. Perhaps nothing illustrates the need for a cooperative effort better than the statistics of land ownership in the state. More than 26,700 individuals and enterprises privately own 76% of Rhode Island's forestland, and the majority (20,900) of these private landowners own fewer than 10 acres (Wildman 2002). The majority of freshwater wetlands within the state are also privately owned, meaning that individual management decisions on private land have a significant impact. In order to achieve a collective vision of protecting large, diverse and contiguous natural areas there needs to be a combined effort involving planners, conservation commissions, land trusts and private citizens (including local naturalists), as well as developers, landscapers, educators and community leaders.

The tools in this guide are provided for all Rhode Islanders to help us safeguard our beautiful creatures and places for future generations.



Tree swallows (*Tachycineta bicolor*) photo by P. Paton

KEY CONSERVATION PARTNERS AND AVAILABLE OPPORTUNITIES

“At this pivotal point in America’s conservation history, what does the conservation movement have to do to resolve the conflicts between today’s political parties, the global human pressures on our natural systems, and the need to create an environmental future in this country and around the world that is ethical, sustainable, and achievable? The answers, I believe, come not from Washington, but rather from a nationwide movement of landowners, government agencies, nonprofit organizations, and community groups working together to protect the places they value...”

~ Bob Bendick, former RI DEM Director

Statewide**RI DEM Division of Fish and Wildlife**

The RI DEM Division of Fish and Wildlife prepared the original RI Comprehensive Wildlife Conservation Strategy in 2005, and the 2015 RI WAP revision is the next ten-year blueprint for wildlife conservation in the state. The 2015 RI WAP two-year process engaged partners and the public to identify priority actions needed to address key threats to Rhode Island’s fish and wildlife and their habitats.

Key improvements in the 2015 WAP include:

1. Web-enabling of the RI WAP;
2. The addition of the *Community Wildlife Conservation Guide*, which responds to the need to provide information and technical assistance to municipalities; and
3. The addition of SGCN species and habitat profiles that summarize the key information needed to conserve them in RI

RI WAP is intended to complement existing efforts and provide decision-makers with further detail and specific recommendations for actions to conserve fish and wildlife. Other key statewide initiatives affecting wildlife conservation are outlined below. For further information on Collaboration with State Partners, see [Chapter 7](#) of the full RI WAP.

The Division of Planning’s Statewide Planning Program and the State Guide Plan’s Land Use 2025

The Rhode Island Division of Planning, within the Department of Administration, provides centralized state planning through the RI [State Guide Plan](#). This system of plans, and State Guide Plan Element 121-[Land Use 2025](#) in particular, contains goals, policies and actions for the protection of natural resources, including beaches and wetlands, farmland and forests, greenways and greenspace. The overarching vision of *Land Use 2025* is that “Rhode Island will be a constellation of community centers connected by infrastructure corridors and framed by greenspace.” The sprawling development pattern of the last few decades is “a decided departure from the long-term trend.” The shared goal of *Land Use 2025* and the RI WAP is to return to a land use vision that promotes an urban-rural distinction and in so doing leaves wild and other undeveloped places for future generations of Rhode Islanders and wildlife. As Rhode Island’s primary plan for conservation and development in the 21st century, *Land Use 2025* “articulates the State’s over-arching goals, objectives, and strategies to guide and coordinate the land use plans and regulations of municipalities and State agencies and to direct good, strategic projects at both the State and municipal level.” **It is mandatory that the goals and policies of *Land Use 2025* and all Elements of the State Guide Plan be reflected in the municipal comprehensive plans.**

In addition to the RI State Guide Plan, further guidance and support is provided by the Division's Statewide Planning Program staff, who specialize in land use, comprehensive planning, GIS, and transportation, to name a few. The Division of Planning has links to many collaborative plans that influence the fate of wildlife and the natural resources upon which they rely on the [Land Use and Natural Resources](#) section of their website.

Local

Municipalities and Local Comprehensive Plans

Municipal Comprehensive Plans are one of the most powerful tools that municipalities have to protect land and to ensure its appropriate management. They provide a blueprint for each community by laying out long-range goals, formulating an implementation plan to achieve those goals, and serving as the foundation for municipal zoning. If a municipality wishes to protect wildlife habitat effectively, including the enactment of ordinances or regulations, it must address this topic in its comprehensive plan. Yet, while municipalities have the authority to enact conservation measures, many are short on time, funds and/or the expertise necessary to do so. In fact, only a third of Rhode Island's 39 cities and towns presently have a fully approved comprehensive plan. Under these circumstances, partnerships become particularly vital. RI WAP aims to provide guidance to make conservation work more efficient and more cost-effective for Rhode Island cities and towns.

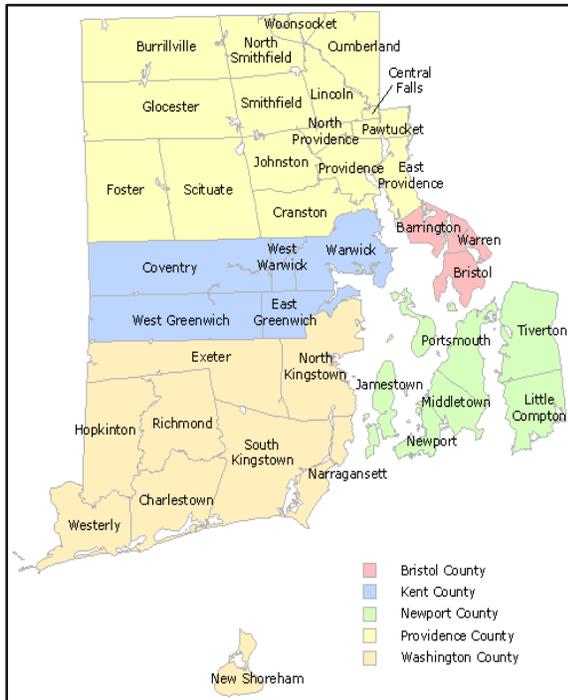
Municipalities can also identify areas where development or redevelopment may be directed in order to avoid sensitive habitat as well as preserve community character. Town planners can note if there are any future road or utility plans for undeveloped blocks of land, as town infrastructure policies can contribute significantly to habitat fragmentation, and it is more economically and environmentally sound to avoid areas that do not have existing infrastructure.

Section 6 of the Rhode Island General Laws' [Rhode Island Comprehensive Planning and Land Use Act](#) (§ 45-22.2-6) lists the required content of a comprehensive plan. Of these required elements, the most important for addressing wildlife conservation are within the goals and policies, maps, natural resources, and implementation sections. The goals and policies section should include a long-term vision for natural resource conservation, including SGCN fish and wildlife and habitat protection. The maps and natural resource sections should include all natural resources, such as, but not limited to, water, soils, prime agricultural lands, forests, wildlife, wetlands, aquifers, coastal features, and floodplains and be guided by the COA and other mapping in RI WAP. The natural resources section should not only provide an inventory of wildlife habitats and other resources, but should also address the local value of these wildlife habitats, as well as "goals, policies, and implementation techniques for the protection and management of these areas." The implementation program should refer back to the wildlife conservation objectives and describe a plan to meet them, including any municipal actions required to adopt or amend any codes or ordinances to conform to the comprehensive plan. The zoning ordinance and map may need to be amended and the land use section should also address the process and schedule by which these amendments will be made to accommodate wildlife. For example, plans can be written or amended to include policies on protecting undeveloped habitat blocks.

Conservation Commissions

Conservation Commissions are another valuable resource available to most (32 out of 39) Rhode Island municipalities. R.I. Gen. Laws §§ 45-35-1 through 45-35-4 enable city or town councils to create three to seven-member conservation commissions, "the purpose of which is to promote and develop the natural resources, protect the watershed resources, and preserve natural esthetic areas within municipalities." The statute also asserts that each commission "shall conduct research into its local land areas and seek

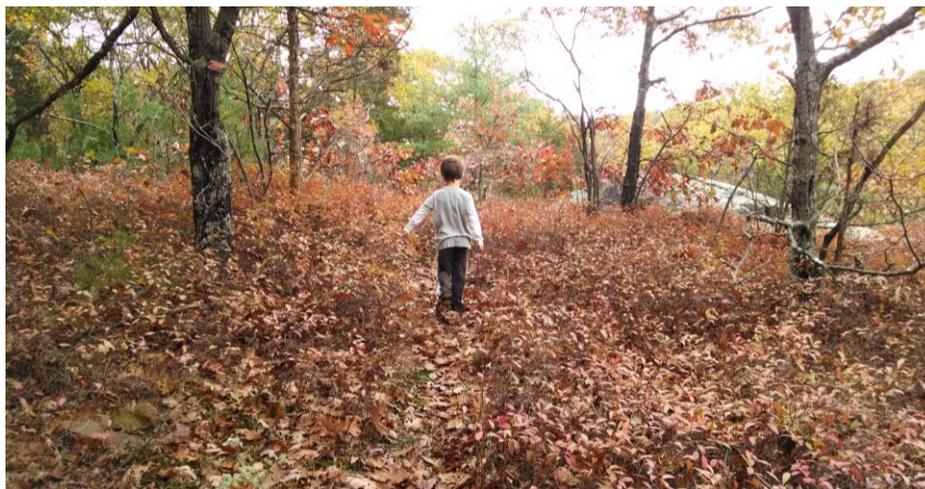
to coordinate the activities of unofficial bodies organized for similar purposes.” Commissions are charged with keeping an index of all open space within their municipalities, and they “may recommend to municipal councils, boards, or agencies, a program for the better promotion, development, utilization, or preservation of open areas, streams, shores, wooded areas, roadsides, swamps, marshlands, and natural esthetic areas.” Commissions can also receive gifts of funds or property in the city or town’s name or acquire interests in such properties (such as easements or development rights) by gift, purchase, or otherwise, and shall manage these in accordance with their mission. [The Rhode Island Association of Conservation Commissions](#) (RIACC) is a non-profit, grassroots network for municipal conservation commissions and their regional counterparts aimed at enhancing education, problem solving, cooperation, and coordination for better conservation outcomes.



Map of RI Counties, Cities, and Towns.
 Courtesy of RIDLT

Land Trusts

The state has over 45 land trusts, including 18 municipal land trusts, and all but two cities and one town have at least one land trust within their borders. Despite their impressive numbers and some very meaningful conservation outcomes at the municipal scale, coordination between these organizations has so far been limited because land trusts are usually staffed by volunteers whose time is limited. Land trusts must be creative and resourceful with their limited time, staff, and funds. To that end, the [Rhode Island Land Trust Council](#) (RILTC) provides a vital service as a vehicle for sharing technical expertise and advice among its members and with the public at large. Land trust efforts are influenced by local natural assets and priorities, with some focusing on agricultural preservation, while others are interested in protecting larger natural habitats. This guide can help land trusts identify local conservation goals and the actions needed to achieve those goals.



Limerock Preserve, photo by A. Freitas

7 STEPS FOR EFFECTIVE CONSERVATION PLANNING IN YOUR COMMUNITY

*“Design matters enormously in the making of great places.
We have to design for what fits the land and its surroundings.”*
~ Ventura City Manager Rick Cole

These conservation planning steps were developed to provide help with setting goals, finding and assessing information and solutions, and following through with conservation actions. The process is intended to be applicable to all audiences. While the steps do not specifically address municipal comprehensive plans or state-established timelines for bringing these plans into compliance, municipal planners should be able to fit the comprehensive planning process into the broader steps below.

STEP 1: Visioning (Setting Long Range Goals)

Identify what features of the planning area (neighborhood, city/town, region, etc.) are important to conserve. These should include a mix of the natural (Use the RI WAP information and maps) and cultural assets that contribute to your area’s livability and unique sense of place. *What do you want this place to look like in 50 years and beyond? What are the obstacles to achieving this long-range vision?*

Working together to establish a shared vision and goals creates connections among the members of your group and helps with prioritizing actions down the line. When decisions or opportunities arise, the path forward is much clearer.

Municipal planners should start by reviewing their city/town’s comprehensive plan. What is said regarding goals for the community? Is habitat included? If not, goals and policies for protecting habitat should be added.

A simple start could be to add language indicating that development should be directed away from COAs and that COAs should be protected to the extent possible.

See *Appendix: Wildlife Habitat Protection Checklist* for further detail.

STEP 2: Inventory Natural Resources/Assets (Information Gathering)

Identify the key species and habitats in your area, as well as Core Natural Areas, Sites, and Corridors. At a minimum, use the Conservation Opportunity Area (COA) mapping to note which habitats are already protected and identify important habitat patches that remain vulnerable. COA mapping is discussed in further detail at the beginning of [Chapter 3](#) of this guide as well as in [Chapter 4](#) of the RI WAP. Additional tools for completing Steps 1 and 2 include the following:

➤ **RESOURCE MAPS AND GUIDES**

- RI DEM developed [species and habitat profiles](#), complete with maps, specifically for the 2015 RI WAP revision. Species data is provided at the township level, whereas habitat maps depict the extent of specific habitat types throughout the state. Species accounts that accompany the maps identify the habitats in which the subject species can be expected.
- The [RIGIS](#) (Geographic Information System) website is a great place to start and has imagery and base maps as well as a wealth of information on the state’s biological and ecological; conservation; geological and geophysical; cultural; infrastructure; economic; and political, land use, and planning resources among others. The [Rhode Island Digital Atlas](#) provides much of this same data in a quick, easy to use format.

- [RI DEM's Map Room](#) includes valuable coverages such as [Conservation Opportunity Areas](#), environmental justice areas, flood hazard areas, groundwater resources, state and regional historical land use, and soil types. All of these can easily be pulled up and assessed in the available ArcGIS online mapping viewer.

For those who wish to identify specific key habitats in their area, the Map Room also hosts the preliminary mapping of ecological systems based on the [Rhode Island Ecological Communities Classification](#) (Enser et al. 2011). The RIECC is an amalgamation of two previously published classifications: the Northeast Terrestrial Habitat Classification System (NETHCS) (Gawler 2008) and the Natural Communities of Rhode Island (NCRI) (Enser and Lundgren 2005). Ecological systems are recurring groups of biological communities that are found in similar physical environments and are influenced by similar dynamic ecological processes, such as fire or flooding. The classification of these systems provides the foundation for identifying key habitat types in the RI WAP.

URI hosts a [RI Ecological Communities Photo Atlas](#) that include links to photos of exemplary Rhode Island habitats that can help stakeholders recognize the different habitat types across the state.

- The Coastal Resources Management Council (CRMC), URI Coastal Resources Center/RI Sea Grant, URI Environmental Data Center and Department of Geosciences, the Statewide Planning Program, and The Nature Conservancy developed a pilot project with the Town of North Kingston in 2011 to evaluate property vulnerability along the coast, salt marsh migration, and other impacts from sea level rise. This was later expanded to model statewide sea level rise scenarios of 1, 3 and 5 feet, along with the 1938 hurricane surge, and to assess saltmarsh migration under these scenarios using the Sea Levels Affecting Marsh Migration (SLAMM) model. All these mapping products are available on the [RI Sea Grant webpage](#). This information can help communities make better planning decisions, including those regarding public infrastructure and safety improvements.



Hurricane Sandy damage at Misquamicut, photo by RI Division of Planning

- The Rhode Island CRMC and partners have developed [Sea Level Affecting Marshes Model \(SLAMM\) Maps](#) for the coastal wetlands of all 21 Rhode Island coastal communities. The purpose of the maps is to show how coastal wetlands will likely transition and migrate onto adjacent

upland areas under projected sea level rise scenarios of 1, 3 and 5 feet in the coming decades. The maps are intended to support state and local community planning efforts and to help decision-makers prepare for and adapt to future coastal wetland conditions despite the inherent uncertainties associated with future rates of sea level rise. For example, communities can use the maps to evaluate property vulnerability along the coast and to make better planning decisions, including those regarding public infrastructure and safety improvements.

For additional natural resource mapping, refer to the full RI WAP.

➤ PROFILES

The [RI WAP species profiles](#) (fact sheets) described in the maps section above have been developed for many of the animals and key habitats/natural communities in your town. Refer to these profiles to become familiar with your town's high value habitats. RI DEM also has a separate set of [Wildlife and You fact sheets](#) on some of the state's more commonly encountered and/or interesting wildlife with a lot of good information on how to live in harmony with these animals.

➤ CLIMATE CHANGE PLANNING

There are many useful resources to help with planning for climate change. At a minimum, use the Conservation Opportunity Area mapping to identify better and best ELUs in your area. ELUs take into account climate change because more diverse areas tend to be more resilient. The SLAMM and Shoreline Change maps discussed above are examples, but there are a growing number of publications that can guide decision-makers through the process of anticipating changes to their area and designing effective adaptive management strategies to build resiliency into the landscape. These include the following:

- The American Association of State Highway and Transportation Officials (AASHTO) [Transportation and Climate Change Resource Center's Adaptation Tools](#) page includes links to reports, finding and programs from [EPA](#), [FEMA](#), [NOAA](#), and other federal organizations.
- [Climate Adaptation Knowledge Exchange \(CAKE\)](#) (Rubinoff et al. 2013)
- [Climate Change Adaptation Clearinghouse](#)
- The [Climate Change Response Framework](#) has information on a number of projects, partners, tools and resources, including the US Forest Service's [Forest Adaptation Resources: Climate Change Tools and Approaches for Land Managers](#) (Swanston and Janowiak 2012).
- [Climate-Smart Conservation: Putting Adaptation Principles into Practice](#) (Stein et al. 2014) and the National Wildlife Federation's [Quick Guide to Climate-Smart Conservation](#)
- [Cost Efficient Climate Adaptation in the North Atlantic](#) (Schechtman and Brady 2013)
- [National Fish, Wildlife & Plants Climate Adaptation Strategy](#) (2012)
- [NEclimateUS.org](#)
- [New England Climate Adaptation Project](#)



American Burying Beetle (*Nicrophorus americanus*), photo by C. Raithel

- [Resilient Rhode Island](#)
- USDA Forest Service's [SAVS: A System for Assessing Vulnerability of Species](#)
- The [Narragansett Bay National Estuarine Research Reserve's](#) (NBNERR) [Coastal Training Program](#) (CTP) offers numerous training opportunities designed to arm coastal decision-makers with the information and skills to make informed decisions about how to best protect Narragansett Bay and its watershed.
- There are already well-established ways to reduce greenhouse gas emissions that contribute to global warming. Communities and individuals can do their best to promote tree planting and responsible forestry and agriculture, waste reduction, green energy, green construction and renovations, and efficient transportation. The National Park Service's [Green Parks Plan](#) (2012) and the US Department of Energy's [Clean Cities](#) program provide many climate-friendly and environmentally sound suggestions and examples.

STEP 3: Analyze the Condition of Natural Resources/Assets (Interpreting Information)

Understand the threats to SGCN wildlife and key habitats in your area and how to address them. Information about these threats as well as the actions recommended to address them can be found in RI WAP Chapters [3](#) and [4](#) and the [RI WAP species and habitat profiles](#). Some threats to wildlife occur across multiple towns or statewide, but every community possesses a unique suite of species and habitats that may require site-specific actions. For example, invasive species control varies depending on the offending species; or the management of a property may be governed by the specific details in a conservation easement. The [RI WAP Community Liaison](#), who works closely with the RI DEM Division of Fish and Wildlife, The Nature Conservancy, and other conservation groups, can provide additional information and guidance.



Sea Chickweed (*Honckenya peploides*), photo by S. Ruhren

INCORPORATE HABITAT INTO YOUR TOWN'S COMPREHENSIVE AND OPEN SPACE PLANS

RI municipalities are required to prepare an open space inventory for their comprehensive plans. Using the mapping resources above, municipalities can work with local land trusts and other conservation organizations to identify parcels adjacent to already-conserved properties or public lands that, taken together, would protect new core natural areas or expand existing ones. The goal is to protect a range of resources, including habitat, unique or rare geologic or landscape features, water quality, historical sites, scenic views, important landscapes, farms, and trail systems, and these resources often overlap. Include the RI WAP COA mapping or go a step further and prioritize your town's individual needs based on specific habitat and other natural resource information.

See [Municipalities and Local Comprehensive Plans \(Chapter 3\)](#) for more information on [incorporating Habitat into municipal comprehensive plans](#).

STEP 4: Develop Conservation Strategies

- Identify strategies and actions your organization can implement or influence to address the needs of key species and habitats in your community (e.g. land-use decisions).
- Focus on diverse habitats that will sustain SGCN wildlife in your area as changes occur over time.
- Consider scale and scope, time frame, budget, political will, available expertise, management needs and available options, all of which will influence your likelihood of success.
- What actions might provide the most benefit to the greatest number of species given your particular set of constraints? Are there actions that could be considered “low hanging fruit”?
- Strategies should be realistic and achievable, and progress toward established goals should be measurable.

The tools and resources to help begin this important step are located in [Chapter 4](#). Using these examples and tools, you can design unique actions that suit your specific conservation needs and goals. Additionally, the [RI WAP Community Liaison](#) can help you identify resources, threats, and recommended actions.

STEP 5: Integrate conservation planning into routine decision-making and planning.

Ask yourself how each and every decision in your area affects wildlife. This can be at the project, organizational, or community planning level and involve providing input on policies and regulations related to zoning and development. All individuals are encouraged to become involved in the local land use planning process as well as to reevaluate their daily routines (e.g., turning off all unnecessary outdoor lighting, reducing fertilizer and chemical use, etc.). Members of local governments are encouraged to:

- minimize the use of chemicals on any town property;
- develop pollinator gardens at schools, libraries and other public facilities;
- investigate green infrastructure (rain gardens, etc.);
- assess local land use regulations to insure they are using techniques to avoid and reduce development impacts to habitat (see Chapter 4 Tools).

STEP 6: Develop partnerships and take advantage of available resources.

Funding limitations often constrain conservation work, and most projects (e.g., land acquisition, restoration, stewardship) must be collaborative to succeed. Different groups have different abilities as well, and partnering can yield extraordinary results. Meet cooperatively with neighboring towns and town and regional planning and conservation groups to explore cooperative land protection and management options.

The [RI WAP Community Liaison](#) is available to help with this step and to connect you to important allies and resources. Local land trusts or conservation organizations are key resources. As the English writer John Heywood noted, “Many hands make light work.” More ideas and funds can often be leveraged from partnerships than when individuals or organizations work on their own. [RI WAP Appendix 1a](#) includes an extensive list of available resources.



Black Duck (*Anas rubripes*) banding, photo by J. Beuth

STEP 7: Take Action

The next step is to execute the conservation strategies developed in Step 4 as well as applying these strategies and your long-range vision to capitalize on opportunities as they arise.

Real conservation planning is not a one-time task that ends with Step 7, but rather an iterative process. In order to be truly effective, it's important to monitor and adapt to changing conditions and new information. Taking the time to evaluate your efforts in order to learn what did or didn't work out as planned is time well-spent. Monitoring and adaptive management are addressed in more detail in RI WAP [Chapter 5](#).

"Do not wait for extraordinary circumstances to do good action; try to use ordinary situations."

~ Jean Paul Richter

While the particulars of conservation work can vary greatly in scope and scale, there are a number of key ingredients that most successful conservation projects have in common.

- **A project that makes sense:** In order to gain support from local officials, regulatory agencies, partners and funding sources, projects must demonstrate a clear vision, be achievable within a reasonable time frame and be financially feasible.
- **A Partnership Approach:** Conservation work is generally expensive. Fostering partnerships can help make costs more manageable by pooling and leveraging funding sources. Partnering can also often reduce costs overall by involving partners who have diverse expertise, the benefit of which you would otherwise need to pay to secure. Finally, having a number of diverse partners makes it easier to market your project to the public and anyone else whose agreement may be necessary and/or desirable to move forward. More proponents means more avenues to get out your message, and while accommodating multiple objectives might involve some compromise and negotiation, it typically also broadens the appeal of the project within the community.

- **Strong Leadership:** Having many partners is wonderful, but it is also often necessary to have a project driver (often a single point person) who is very passionate about the work and/or is specifically charged with seeing the project through to completion. When other partners or interested parties get too busy and it falls off their radar, the project driver is there to carry the ball and take the necessary steps to keep the project moving forward.



Green Snake (*Opheodrys vernalis*), photo by C. Raithel

The two case studies that follow illustrate these elements for two very different projects. The first partnership conserved one of the largest remaining undeveloped habitats in the state, while the second rehabilitated an urban stream to improve water quality, restore fish passage, and to transform an area that had become a dangerous blight on the community into a source of recreation and pride.

***Partnering for Habitat Conservation:
Tillinghast Pond Management Area***

Tillinghast Pond Management Area (TPMA) consists of 1,574 acres in the town of West Greenwich and another 72 acres in Coventry and is comprised of five different formerly privately owned parcels (the Shepard Estate, Bates, Cioe, Glen Avon Farm, and Brown parcels). TPMA was purchased via a partnership between The Nature Conservancy, RI DEM, and the Town of West Greenwich.

TPMA is adjacent or in close proximity to over 18,000 acres of state-owned or private conservation lands. The site itself includes approximately 1,375 acres of upland habitats (mixed oak-pine, evergreen, and deciduous forest; agricultural fields; and meadows) and 259 acres of wetland (emergent, shrub swamp, and forested) and open water habitats.

The vision for the property is to forever protect the integrity of its habitats and the high quality of the upper Wood River watershed while providing the public with opportunities to enjoy compatible recreation activities.

The preservation allowed the Town of West Greenwich to secure open space and prevent development that would have cost the town in additional public services. The parcel that would have been developed was adjacent to state land, so its preservation helped DEM and TNC protect one of the last large unfragmented forests in the state.

TPMA partners worked hard to balance conservation and access, which included rerouting trails to maintain intact habitats while still ensuring scenic views. The TPMA partnership formed a management council, which continues to leverage each partner's strengths to achieve TPMA's vision and goals. Additional funding partners included the USFS, USFWS, and USDOT.



Tillinghast Pond Management Area, photo by A. Freitas

An Urban Oasis in Olneyville:***Atlantic Mills Dam at Riverside Park and the Reclaiming of the Woonasquatucket River***

In March 1998, then Vice-President Al Gore designated the State of Rhode Island and the Woonasquatucket River Greenway as one of 16 Brownfields Showcase Communities. The application was submitted by the State of Rhode Island, the City of Providence, and The Providence Plan, sponsor of the Woonasquatucket River Greenway Project. This designation helped secure funding from the Environmental Protection Agency (EPA) for the environmental assessments and remedial designs for Riverside Mills and Lincoln Lace and Braid - city-owned properties along the Woonasquatucket American Heritage River located in Providence's Olneyville neighborhood, a federally designated Enterprise Community. In addition, the EPA designated a full time employee to oversee and direct the restoration of the two Brownfield sites and assist in the development of the greenway.

Plans for these sites drew national attention as a unique effort to promote reuse of a Brownfield to meet the recreation and open space needs of an underserved and disadvantaged population. Through the work of the community-based Woonasquatucket River Greenway Program (WRGP), over 250 residents, and members of institutions, community centers, recreation directors, schools and churches were interviewed for local input on the site design for the project.

This multi-stakeholder effort restored the Riverside Mills site and adjacent parcel to create an approximately 8-acre park dedicated to environmental education, recreation, and open space. In addition, the site was chosen as the demonstration site for a riparian (riverside) forest restoration.

State of Rhode Island funds were used for a preliminary remediation that included the removal of Underground Storage Tanks at both sites. Final remediation and grading at Riverside Mills was funded by the City of Providence and by a \$1 million HUD Neighborhood Initiative grant secured by Senator Jack Reed. Funding for park improvements came from the City of Providence as well as from a \$450,000 Greenways grant and a \$100,000 Trails Grant, both from the State of Rhode Island. The forest restoration was funded through a US Forest Service Grant and National Fish and Wildlife funds, secured through the coordinated efforts of DEM's Sustainable Watersheds Office and the Woonasquatucket River Watershed Council.

In 2004 the Woonasquatucket River Watershed Council, the RI NRCS began the charge to restore fish passage to the Woonasquatucket River. They were joined by partners from the RI DEM, USFWS, Woonasquatucket River Watershed Council, 166 Valley Street (Rising Sun Mills), the City of Providence (Atlantic Sun Mills), and EA Engineering, Science, and Technology, Inc. (consultant).

In 2007, construction of the first fish ladder was completed at the dam located at the Rising Sun Mills on Valley Street in Providence (downstream from the Atlantic Mills Dam at Riverside Park). By 2010, not only had a fish ladder also been constructed at the Atlantic Mills Dam, but the Dyerville Dam upstream of the park and the Paragon Mills Dam were both removed entirely. After fishway installation was complete at both dams, eel ladders were added. Today, as a result of this tremendous partnership, herring, alewife, American shad, and American eel have been restored to the Woonasquatucket River in one of Rhode Island's most developed landscapes.

Funding for fish passage restoration was provided by the NRCS, the Woonasquatucket River Watershed Council. The RI DEM has been monitoring and maintaining the fish ladders starting in 2008 at Rising Sun Mills and in 2011 at Atlantic Mills. The Woonasquatucket River Watershed Council also monitors fish passage in this stretch of the river.



**Rising Sun Mills fish ladder in Providence, photo by DEM Division of Fish & Wildlife Fisheries section
Inset: American eel, photo courtesy of USGS**

CHAPTER 4 - TOOLS FOR ACTION

“People can be trusted to create good design for their community if you give them the tools and facts.” ~Alex Graziani, Executive Director of the Smart Growth Partnership of Westmoreland County, PA

If conservation actions are to be successful, it is necessary to understand the importance of addressing not only land preservation, but also management and restoration. The tools described below are intended to provide decision-makers and communities with choices and ideas for effective ways to meet the numerous and often competing short and long-term needs of their communities. Perhaps you might start with some of the tools identified here and then be moved to seek out additional resources or create solutions of your own.

Among the most important resources this guide can offer is someone you can contact for help navigating the conservation planning process. Planners, conservationists, and others establishing conservation priorities are encouraged to seek assistance from RI DEM and other Wildlife Action Plan Partners. The [RI WAP Community Liaison](#) was hired primarily for this purpose. The liaison’s goal is to assist in establishing conservation priorities and connecting you to the human, technical, and capital resources that will help achieve those goals.

This section of the guide is organized into nine major categories: (1) Land Acquisition, (2) Techniques to Preserve Open Space as Land is Developed, (3) Tools to Avoid and Minimize Impacts to Wetlands and Aquatic Habitats, (4) Habitat Restoration and Management, (5) Water Quality Resources, (6) Education, (7) Ways to Minimize Your Impact on Fish and Wildlife and Set an Example for Others, and (8) Additional Resources.

4.1 LAND ACQUISITION

One of the surest ways to protect land is to purchase it. It’s important to prioritize land acquisition priorities, to consider some alternative options to outright ownership, and to explore all available funding sources.

- Use the maps and existing data to build support for efficient local land protection. Aim to protect **sites** with high value habitat, **corridors** between important parcels, and lands adjacent to existing protected lands that could be combined to form **core natural areas**. Use the COA map to see how the parcels can benefit wildlife most. If they are within the COA boundaries, this indicates that they offer larger-scale benefits. Still, parcels outside COA boundaries benefit fish and wildlife habitat in the community by conserving and restoring the community’s green space, water and air quality and wildlife habitat.
- Set some goals: each town should strive to maintain as many larger blocks of undeveloped land as possible, and especially those containing a diversity of key habitats listed in RI WAP. Where appropriate, towns should work together with neighboring towns and bordering states to maximize the size of habitat blocks conserved in the region. Only by protecting enough larger blocks of land will many species find the home ranges they need to breed, travel, and protect themselves.
- Shape and adjacency matter. Just as the size of a parcel contributes to its conservation value, purchasing conservation land adjacent to existing conserved parcels is beneficial because it helps to

maximize contiguous natural areas. The shape of a parcel also influences its conservation value. In general, the goal is to maximize total area relative to the total amount of edge on a site. In other words, squares are preferable to long rectangles or irregularly shaped parcels. One really obvious example of this is a wooded strip along a highway. Such a contiguous strip of trees could run for miles, but its integrity is highly compromised by the presence of the highway along its entire length. If the strip is also not very wide and has house lots immediately behind it, the value of this land to most wildlife regardless of its acreage would be quite low.

- Fee ownership and conservation easements are two ways to protect important parcels.
 - Fee simple ownership refers to outright and absolute ownership of the land, wherein the owner has the right to do with it whatever he or she wishes as long as it is lawful.
 - A conservation easement is a legally binding agreement between a landowner and a qualified conservation organization intended to protect lands for a specific conservation purpose. Landowners retain ownership of the property, but they surrender certain rights associated with that ownership, depending on the terms of the easement (e.g., the right to develop). Conservation easements run with the land, which means that, if the landowner should sell the property, the conservation easement would remain and its restrictions would transfer to the new owner in perpetuity. Conservation easements can be sold or given away. In the latter case, if the easement meets certain criteria it may be eligible for income tax treatment as a [charitable gift](#). The Internal Revenue Code requires that an easement protect at least one of the following conservation values: public recreation/education, natural wildlife habitat, open space, or historic preservation. ***This should not be confused with a deed restriction, which is generally less binding than a conservation restriction and has no practicable enforcement mechanism and no associated tax benefit to the landowner. As such, deed restrictions should be avoided if other options are available.*** Conservation easements should call out the proper management and uses of the land that are compatible with the conservation goals and interests of the habitat.

Conservation easements are legally binding, so there are some steps that landowners and prospective buyers should take before entering into an easement agreement. The first step should be to outline a long range vision for the property and consider any future activities that might be necessary or desirable to achieve this vision. Second, familiarize yourself with the various organizations that hold easements and be certain to select partners whose underlying goals are in harmony with this long term vision. Third, refer back to this vision when preparing applications for funding. Make sure that the language of the application allows for activities that you or your organization may want to pursue in the future. Finally, read all easement language carefully and understand the established terms before finalizing an easement. Management changes may be possible on lands protected by an easement after that easement is in place, but there are limitations. At the state level, DEM can only approve changes that do not conflict with the original purpose of the easement or the originally stated goals of the applicant. If prospective applicants follow these four steps, they will be less likely to need to request modifications to easements and more likely to be approved if they do.

For detailed information on planning, developing, and documenting Conservation Easements, refer to the [Rhode Island Conservation Easement Guidance Manual](#) (2009). The [Land Trust Alliance \(LTA\) website](#) is another excellent source for information on this topic.

- Contact RI DEM's [Division of Planning and Development](#) to learn about the many funding sources available for land protection. Also, see the *Habitat Restoration and Management Tools/Techniques*

section of this Chapter for more information on USDA easement programs with the [Farm Service Agency](#) (FSA) and [Natural Resource Conservation Service](#) (NRCS) that help protect and restore important habitat.



White-tailed Deer (*Odocoileus virginianus*), photo by B. Tefft

4.2 TECHNIQUES TO PRESERVE OPEN SPACE AS LAND IS DEVELOPED

As private property continues to be developed, the techniques below can help to minimize the consequent impacts to habitat. In addition to protecting land, these techniques reduce the need for new roads and infrastructure, which are a serious threat to wildlife and costly for communities.

➤ **Conservation Development**

Conventional development typically involves the design of roads and circulation to maximize the number of allowable lots under the regulations. *Conservation Development*, on the other hand, is a zoning technique that begins with identifying and protecting the character defining features of a piece of land prior to it being developed. This reprioritization allows communities to guide growth to the most appropriate areas of a parcel of land in order to protect environmentally sensitive and character-defining features on that same parcel. The goal of conservation development is to be able to permanently preserve at least 50% of a parcel as meaningful open space without reducing the number of house lots. Twenty five Rhode Island municipalities have adopted conservation development.

In order for this tool to be effective, it is imperative that planners and other decision-makers identify the habitats and resources most in need of protection early in the design process so that development can be guided away from these areas. Consider encouraging or requiring the incorporation of design principles that protect riparian corridors and the integrity of core natural areas during site plan review and other local regulations through the use of buffers (*see Riparian Buffer Standards, for example*), habitat curtains around development, and other means. It is also critical that a local land trust or conservation organization be brought into the process early on to help structure the organization of the open space. Land designated as “common land” should have a conservation easement that ensures the proper management and uses of the land that are compatible with the conservation goals and interests of the habitat. The [Rhode Island Conservation Easement Manual](#) can provide guidance with this step.

As *The Rhode Island Conservation Development Manual: A Ten-Step Process for Planning and Design of Creative Development Projects* ([RI Conservation Development Manual](#)) points out, conservation development is not a panacea, as the same number of families moving into the area as with

conventional development would still mean the same increased traffic and demand for services. However, where development is inevitable, having 50% of all the parcels preserved in perpetuity can add up to a lot of land conserved for wildlife, public use, and agriculture. For more information regarding Conservation Development, refer to the RI DEM's [Conservation Development webpage](#) with links to the [Conservation Development Manual](#) and [brochure](#).

➤ **Rural Residential Compounds**

The rural residential compound is a small-scale minor subdivision in which municipalities are more flexible with certain standards, such as allowing shorter and narrower private roads, reduced lot sizes and frontage requirements, in order to encourage creative site design that is more in harmony with the landscape. In return, the developer agrees to build fewer units, and a conservation easement is placed on all resulting properties prohibiting further subdivision of the land. In addition to encouraging lower density development in general, this type of development aims to preserve more open space, and in particular the unique landscape features such as farm and forestland, sensitive resources, and unique habitat. Rural residential developments also reduce road and utility lengths, which in turn reduce storm water runoff and public maintenance expenditures.

Protected open space will not necessarily contain wildlife habitat. For example, open space can be dedicated to community centers or recreational facilities rather than forestry or wildlife management. When drafting zoning requirements, it's important to be clear about what protections will be placed on the land that was spared from development, what uses will and will not be allowable on that land, and who will be responsible for management. Referring back to your vision for your municipality (from Planning Step 1) and the RI WAP for protecting wildlife and its habitat should help you work through those details.

For more information regarding Rural Residential Compounds, refer to the [Model Land Use Ordinances South County Watersheds Planning Assistance Project 2001](#). Grow Smart RI also has a [database](#) of some existing municipal ordinances related to Conservation Development across the state, which includes ordinances addressing Rural Residential Compounds in Burrillville, Gloucester, and Tiverton.

➤ **Site Review and Inspection Fees**

One major impediment to municipalities staying on top of sound day-to-day decision-making that forwards their long-term goals can be a lack of appropriate resources (staff capacity, funds, etc.). This can result in ill-planned development, which often brings negative economic, environmental (wildlife, hydrology, water quality, etc.), and/or social impacts upon communities. It is imperative that the municipal review authorities be able to hire third-party review and inspection services to provide the necessary level of technical scrutiny to proposed projects and that these services be at the expense of the applicant, while avoiding any conflict of interest in appearance or fact.

A local Review and Inspection Fee Ordinance can address this resource gap by allowing communities to retain qualified professionals to review applications and conduct field inspections to ensure that more complicated developments are designed and constructed in accordance with municipal requirements. Specifically with respect to wildlife, municipalities should consider requiring professional review when a proposal potentially conflicts with a rare plant or animal species and RI DEM Division of Fish and Wildlife is not able to conduct a review. In this manner, communities can ensure that they stay true to their vision for preserving their wildlife heritage, natural places, and

community character by promoting appropriate residential design and reducing the environmental impacts of new development projects.

For more information regarding Site Review and Inspection Fees, refer to the [Rhode Island Low Impact Development Site Planning and Design Guidance Manual, March 2011](#).



Ninigret, photo by J. Osenkowski

➤ **Transfer of Development Rights (TDR)**

Transfer of Development Rights, or TDR, is “a land use regulatory tool under which development rights can be severed from a tract of land and sold in a market transaction. The parcel from which the rights are transferred is then permanently restricted as to future development, and the purchaser of the rights may assign them to a different parcel to gain additional density—for example, more residential units or more commercial floor area than would be allowed without the transferred rights. Usually, TDR programs designate sending areas from which rights may be transferred, and receiving areas to which the rights may be sent” (Taintor 2001). TDR affords towns the ability to shift development into more concentrated areas and to allow others to remain more sparsely populated. Towns can grant developers the flexibility to shift house lots around on one parcel or to transfer houses from one parcel to another elsewhere in the town. This flexibility helps communities preserve sensitive habitats entirely and without the expenditure of public funds that would otherwise be needed to purchase the land. For more information regarding TDR, refer to the [RI TDR Manual developed by DEM \(2015\)](#).

➤ **Village Development**

Traditional New England villages are an essential part of the culture and fabric of this area. Villages typically sprung up around a mill. They are characterized by compact centers with historic buildings and with houses and shops close to the road and to each other, thus making for walkable neighborhoods. Another defining characteristic of villages was that they were surrounded by undeveloped land.

Village development is aimed at reclaiming, and in some cases replicating, the essential components of traditional villages. Following a thorough visioning process (Step 1 of the planning process), Planned Village Development Districts can be demarcated and designed to promote adaptive reuse of old buildings and infill of existing village cores with complementary new structures (including mixed-use development) and/or to designate a new area of development adjacent to an existing

village center that preserves the area's compact design and natural and cultural features. Village development is a particularly effective land conservation tool if it is paired with TDR.

For more information regarding Village Development and model regulations to encourage village growth, refer to the [Rhode Island Village Development Guidance Manual](#).

➤ **Maintain Working Farms and Forests**

In order to safeguard our existing farms and forests from development pressure, we must look for ways to incentivize their protection.

- Landowners can take advantage of Rhode Island's [Farm, Forest, and Open Space Program](#), which allows eligible properties to be assessed at their current use rather than their value for development. This eases the financial burden on farm and forest owners and lessens the chance these lands will have to be sold for development.
- Municipalities can promote zoning that allows for multiple uses of farmland or woodlots, including activities such as educational and recreational services, food sales, hay and sleigh rides, etc. RI DEM's [Community Guidance to Maintain Working Farms and Forests](#) (2012) offers examples of such auxiliary uses that can provide supplemental income to farm and forestland owners so they can afford to keep their land. It also provides municipalities with suggestions for appropriate zoning language and performance standards so that they may allow these uses while still protecting the interests of surrounding properties and the municipality at large.

➤ **Align Municipal Ordinances with Comprehensive Plans**

Whenever a revised comprehensive plan is adopted, it is important to make any necessary zoning ordinance changes or other revisions to local regulations to follow through with implementation of the change successfully. RI Association of Conservation Commissions provides some model language for comprehensive Plans and [local ordinances](#) (e.g. farm viability, stormwater pollution prevention, etc.) on its webpage.

4.3 TOOLS TO AVOID AND MINIMIZE IMPACTS TO WETLANDS AND AQUATIC HABITATS

Protecting wetlands and aquatic habitats is critical because of the essential functions and values they provide. These include maintaining and even improving water quality, buffering low-lying communities against flooding, protecting groundwater and providing valuable recreation opportunities. Wetlands and aquatic habitats also provide essential wildlife habitat for many species, both aquatic and terrestrial. All of these reasons make the protection of these habitats not only a top priority for fish and wildlife conservation, but a sound decision for us and for future generations.



Marsh wren (*Cistothorus palustris*) photo by P. Paton

- RI DEM's [What's the Scoop on Wetlands? Frequently Asked Questions about DEM's Freshwater Wetlands Program](#) explains the values of wetlands and can help you learn to recognize them on your property and in your neighborhood. It also explains what activities are regulated in or around wetlands and the procedures for applying for permits for regulated activities. The Northern Rhode Island Conservation District's (NRIDC) brochure [Are Wetlands in YOUR Backyard?](#) provides a condensed look at the value of wetlands and how to recognize them on the landscape.

RI DEM has also published two guides aimed at helping Rhode Islanders better protect our wetlands. These are the [Rhode Island Low Impact Development Site Planning and Design Guidance Manual](#) (March 2011) and the [Wetland BMP Manual: Techniques for Avoidance and Minimization](#) (April 2010).

- [Vernal pools](#) are small, usually discrete water bodies that develop in seasonally flooded basins too shallow to maintain permanent water. They generally dry up by the end of the growing season, a characteristic that excludes fish and other predators. As such, vernal pools support particularly unique assemblages of plants and animals, including rare amphibians. They have disproportionately large wildlife value for their size and produce thousands of insects as well as frogs and salamanders that leave the pools and spread out into the surrounding forest to become both predators and prey to many other organisms. Vernal pools are the engines that drive forest ecosystems.

Protecting pool-breeding amphibians requires attention to their complete lifecycle. This includes protecting surrounding uplands and retaining natural forest cover; managing adjacent land uses to prevent pollution and invasive species impacts; and avoiding or removing migration barriers, including use of design and construction [Best Development Practices](#) (Calhoun and Klemens 2002).

- The [Rhode Island Low Impact Development Site Planning and Design Guidance Manual](#) (RI LID Manual), which was written in March of 2011 as a companion to the 2010 [Rhode Island Stormwater Design and Installation Standards Manual](#) (the RI Stormwater Manual), is an extremely important tool for Rhode Island cities and towns in particular. It provides the specific guidance communities will need to revise their applicable land use regulations to avoid and reduce the impacts of stormwater runoff and to effectively comply with the RI Stormwater Manual's Minimum Standard 1: LID (Low Impact Development) Site Planning and Design Strategies.

At its best, the LID manual is also a useful tool for forward-thinking developers and anyone else who wants to better understand how to minimize development's environmental impact and to retain more natural places alongside a more productive and fulfilling developed environment. That's because the tools in this guide all approach achieving stormwater standards from the position that we should work *with* the existing landscape, factoring in the unique geography and character of a place in order to minimize disturbance to that landscape and retain the land's natural ability to absorb, treat, and store stormwater. This guide covers suggestions for:

- **Riparian Buffer Standards** (Chapter 3)
- **Site Clearing and Grading Standards** (Chapter 4), and
- **Special Purpose Ordinances** (Chapter 9), including those for **Impervious Cover, Erosion and Sediment Control, Review and Inspection Fees** (see above), and **Stormwater Utility Districts**, as well as many other tools to maintain and improve the condition of the state's natural landscapes and natural resources.

The above tools are a sampling of some techniques that can be used to help minimize direct impacts to wildlife. For more information regarding low impact development tools that protect habitat, refer to the full text of the [Rhode Island Low Impact Development Site Planning and Design Guidance Manual](#).

- The [Wetland BMP Manual: Techniques for Avoidance and Minimization](#) (Wetland BMP Manual) was the product of a multi-year effort to improve RI DEM's Groundwater and Freshwater Wetland Protection Program. Aimed primarily at assisting applicants (homeowners, builders, etc.) and professional consultants who prepare applications for submittal to the Rhode Island Wetlands Program, the manual is a compilation of Best Management Practices (BMPs) along with examples of acceptable and permitted wetland-friendly designs and practices. The tools in the Wetland BMP Manual can help applicants to furnish complete applications and to adequately avoid and minimize impacts to wetlands, thus facilitating speedier permitting decisions from RI DEM. The manual includes project-specific examples and details that are applicable to many project types that have been successfully permitted in Rhode Island or in nearby states.

For more information regarding techniques to avoid and minimize impacts to wetland resources, refer to the full text of the [Wetland BMP Manual: Techniques for Avoidance and Minimization](#).



Tidal marsh dominated by smooth cordgrass (*Spartina Alterniflora*), photo by S. Alexander

4.4 HABITAT RESTORATION AND MANAGEMENT

Conservation doesn't just mean purchasing or otherwise protecting land from development. It also means ensuring compatible uses on conserved lands, undertaking restoration of degraded lands, improving water quality, and a whole host of other actions to improve habitat value within communities whether or not they fall within a Conservation Opportunity Area.

- Stream daylighting (the redirection of a piped stream into an above-ground channel to restore it to a more natural state) and vegetated stream buffer restoration are very important steps to restore water quality and wildlife habitat, particularly in urban areas. These and other restoration opportunities are discussed in DEM's [Urban Environmental Design Manual](#), DEM 2005.
- Provide informational materials at Town Hall to educate owners of valuable properties about the various easement and other land conservation programs available, such as the USDA [Farm Service Agency's \(FSA\) conservation programs](#) and the USDA Natural Resource Conservation Service's (NRCS) conservation [programs](#), including the [Agricultural Conservation Easement Program](#) (ACEP) and [Healthy Forests Reserve Program](#) (HFRP).
- Consider issuing a joint mailing from the land trust and the town to landowners of important parcels. This could include a letter explaining your town's wildlife and habitat conservation goals and how their property fits in as well as copies of the appropriate species and habitat profiles (these can be found on the RI WAP web site or obtained by contacting the [RI WAP Community Liaison](#)) and information on cost-share and grant programs that might be available.
- Create local support systems that supply these landowners with information on habitat conservation. Examples include:
 - Create a local recognition or reward system for landowners who maintain open space.
 - Provide workshops on how to earn income from forest products.

- Work with the landowner of a conserved property to plan and host a field walk. Visit some of the important features of the property and have the landowner discuss why it was an acquisition priority and their management strategy.
 - Contact the [RI WAP Community Liaison](#) and your local land trust to design workshops for landowners that arm them with information about conservation options and management strategies.
 - Provide a list of licensed foresters with a working knowledge of habitat management for invasive species, problematic native species (e.g., deer), and rare species as well as for timber. Offer workshop for owners of forest as well as working farms and ranches.
 - If time is too limited for the above suggestions, refer landowners of priority properties to the [RI WAP Community Liaison](#) for information on conserving and managing their lands for wildlife.
- Conduct outreach to landowners who might benefit from a “current use” tax status (forestry or farming). Suggest they examine estate and tax planning with a local land trust in order to conserve large parcels of land they own.
 - Require land designated as “common land” to have a conservation easement that ensures the proper management and uses of the land that are compatible with the conservation goals and interests of the habitat. The [Rhode Island Conservation Easement Manual](#) can provide guidance with this step.
 - Seek out appropriate management and support resources.
 - NRCS provides technical assistance to owners managing their land for wildlife. [NRCS’s Insects & Pollinators webpage](#), for example, provides guidance for farmers, gardeners and others to help pollinators.
 - For forest owners, the [Rhode Island Forest Conservators Organization](#) (RIFCO) and the [Rhode Island Tree Farm Program](#) provide information on sustainable forest management.
 - RI DEM’s [Rhode Island WETLANDS: Restoring Rhode Island’s Freshwater Wetlands](#) page contains many useful resources. These include a [Freshwater Wetland Restoration Kit for Landowners](#) and information on RI DEM’s [Water Quality and Wetland Restoration Team](#), the latter of which can help landowners with permits for many types of restoration, including removal of invasive species from freshwater wetlands. Also included is contact information for other state and federal agencies that may have jurisdiction over wetland projects and a phone number for the Wetlands general information person who can help with any remaining questions about jurisdiction and permits.
 - [The Rhode Island Resource Conservation & Development Area Council, Inc. \(RIRC&D\)](#) has a great deal of informational resources for conservation-minded landowners. One such resource is the [RI Coverts Project](#), which RI RC&D began with numerous partners to help woodland owners conserve their land and protect wildlife habitats.
 - The [Rhode Island Conservation Stewardship Collaborative \(CSC\)](#) is composed of the organizations that own conservation areas or make significant contributions to the stewardship of conservation areas in the state and is jointly administered by representatives from ASRI, TNC in RI, RILTC, URI, RINHS, RI DEM and USFWS. CSC “works to advance long-term protection and stewardship of terrestrial, aquatic, coastal, estuarine, and marine areas in Rhode Island that have been conserved by fee, easement, or other means.” It does this by fostering collaborations and partnerships and involving students and volunteers to improve monitoring and stewardship outcomes, disseminating information garnered to a broad audience, drawing from and contributing to existing conservation

databases, and working toward a balance between focus and flexibility with its conservation work. In addition to research, monitoring, information dissemination, and policy work, past CSC projects have also provided training and technical support for local stewards. Although CSC is not a grant-giving organization at this time, they welcome recommendations regarding stewardship ideas and identified needs. Contact information for the [Advisory Council](#) and a list of past and present [projects](#) is available on the CSC website.

➤ **CSC's [Youth Conservation League](#)**

was developed by the Rhode Island Natural History Survey to create outdoor stewardship summer jobs for high school students that help meet Rhode Island's need for hands on labor on conservation lands while engaging young adults in meaningful outdoor projects. The YCL crew focuses on stewardship projects on ASRI and The Nature Conservancy conservation lands as well as on those of land trusts around the state.



2012 YCL and TNC LEAF crews pulling mile-a-minute vine on Block Island; photo courtesy of RINHS

➤ **Invasive Species Resources and Native Alternatives**

As habitats become increasingly populated by introduced species, greater environmental stress is placed upon our native species. Invasive species have become one of the biggest threats facing our native plants and animals. Unfortunately, once an invasive species becomes established at the landscape level, it can be very difficult and costly to control.



Volunteers pull water chestnut (*Trapa natans*) at Chapman Pond, Westerly. Photo by Tracey Bewlay, courtesy of RINHS

Sound environmental policy involves appreciating and planting native species for their beauty and important ecological roles. We can utilize our native species to enhance and beautify our managed landscapes rather than substituting them with exotic species. Native plant species have co-evolved with local insect pollinators (flies, bees, butterflies, and moths) to support healthy natural communities through the cover and food they provide for birds and mammals.

- Rhody Native™** is a program of the Rhode Island Natural History Survey that began in 2010 with a mission to “preserve the biodiversity of Rhode Island’s native plant communities, wildlife, and pollinators, by facilitating the state’s capacity to produce genetically native plants. Rhody Native™ celebrates Rhode Island’s local identity.” Rhody Native™ plants represent a nation-wide movement to move beyond the generalized concept of native plants as alternatives to non-native plants. They are genetically local (evolved here in Rhode Island) and genetically diverse (grown from seed rather than cloned from a limited set of individual plants) The Rhody Native™ website contains up-to-date lists of [available plants](#) and the [farms, nurseries, and garden center locations](#) that carry their stock.



Local ecotypes of RI's native plants for sale at South Kingstown nursery, photo by Graham Gardner

Invasive species can and have caused extensive ecological and economic damage, and costly and often chemically-intensive control efforts are afoot across the state to prevent their further spread. A number of state laws address invasive plants and animals, and there are policies regarding aquatic invasive species ([Rhode Island Aquatic Invasive Species Management Plan](#)) and the [transportation of firewood](#) across state lines. The DEM Office of Water Resources is tracking the presence of aquatic invasive species in freshwaters and offers information about management via the DEM website. DEM’s Division of Agriculture supports additional education, surveillance, and regulatory efforts to prevent the introduction and spread of invasive, exotic terrestrial weeds, insects, and other invertebrate and vertebrate organisms. Yet, there are gaps in state and federal laws and limitations on staff resources to enforce them. Accordingly, programs across the state rely heavily on education and outreach to discourage the introduction and spread of invasive species.

The bright side of this equation is that sellers only provide something when there is a demand for it, and there is something you can do.

- Help spread the word about invasive species, how to identify them, and what to do if you find them. DEM staff is available to provide information and assistance to help you get started.
- Let growers and retailers in your area know that there is a demand for native plants. Conversely, let them know you do not want to purchase invasive species. Help to educate those around you about the benefits of landscaping with natives. The Rhode Island Nursery and Landscape Association (RINLA) maintains a [member directory](#) that will help you easily locate many of the growers and sellers in your area to tell them that native options are important to you. The [Rhode Island Wild Plant Society](#) provides a wealth of information on our native species through programming and publications, holds a native plant sale and provides information on native plant nurseries, and maintains a [Rhode Island and New England Native Plant Library](#).

- The [RI Native Plant Guide](#) is an online, searchable database developed by URI's College of the Environment and Life Sciences, in cooperation with RINHS.
- RINHS also maintains a [complete list of plant species native to Rhode Island](#).
- Specifically with respect to coastal properties, RI CRMC and the URI College of the Environment and Life Sciences (CELS) Outreach Center have partnered to form the [Coastal Landscapes Program](#), which is a multi-tiered education, outreach and demonstration program developed to foster cooperation between CRMC staff, Rhode Island residents, landscapers, and other green industry professionals. The goal of the program is to foster cooperation between these groups to enhance stewardship and protect our coastal resources. One program resource is an [Interactive Coastal Plant Database](#) of species selected for their ability to tolerate coastal conditions, such as sandy soils, wind and salt spray, for use by anyone managing coastal land. None of the plants listed are found on any invasive or potentially invasive plant lists, and the native status is listed, so a user can select for only native species as well; Updated guidance materials for regulated coastal buffer zones are also included, such as a [Coastal Buffer Planting Guide](#) and an updated version of [CRMC's Buffer Zone and Invasive Plant Management Guidance](#). For those interested in more hands-on learning, there is an [Invasive Plant Management Certification Program](#) for green industry professionals providing invasive management service to clients in coastal areas. The Coastal Landscapes Program website also includes a link to a [List of Coastal Plant Suppliers \(PDF\)](#) and list of [Certified Invasive Managers](#).

While appreciation for and use of native plants is very important, it is unfortunately not the whole picture. Managing invasive plants and animals that have already arrived can be critical to protecting native resources on a particular piece of land. In these instances, it's important to be able to recognize invasive species and when they are causing a problem as well as to be able to form a management plan that is sensible and effective.

- **RI DEM's Office of Water Resources** maintains a wealth of information about aquatic invasive species (AIS) on its [webpage](#). This site includes information about which plants and animals are already here (with fact sheets and distribution maps) and some for which we should be on the lookout. It provides information on management options and permitting requirements related to management, as well as case studies. It also contains links to several useful documents, including the [RI Invasive Species Management Plan](#), [AIS mapping](#), and several identification guides, and links to several regional and national AIS programs, including the [Invasive Plant Atlas of New England](#) and the [Northeast Aquatic Nuisance Species Panel](#).
- The [Invasive Plant Atlas of New England \(IPANE\)](#) mission is to "create a comprehensive web-accessible database of invasive and potentially invasive plants in New England that will be continually updated by a network of professionals and trained volunteers. An important focus of the project is the early detection of, and rapid response to, new invasions." IPANE's website includes many full-color photos of [already-present](#) and "[early detection](#)" species throughout New England as well as information on their [existing](#) and [anticipated future](#) spatial distribution based on predictive modeling.



Top left: Common Reed (*Phragmites australis*), right: Japanese Knotweed (*Fallopia japonica*), bottom: Purple Loosestrife (*Lythrum salicaria*), photos by USFWS

- The [Northeast Aquatic Nuisance Species Panel \(NEANS\)](#) aims to protect the marine and freshwater resources of the Northeast from invasive aquatic nuisance species by addressing the aquatic resource concerns of its member states. The Panel's members represent public and private organizations and commercial, recreational, academic, conservation, and tribal interests. [RINHS](#) and [CRMC](#) represent Rhode Island's fresh and salt water interests respectively on the NEANS panel.

The NEANS website contains a host of great information, including an [online guide to ANS](#) and resources page with educational fact sheets, alert posters, and management recommendations; state-specific pages for [Rhode Island](#) and all other member states, and a link to a [summary of RI ANS laws](#).

- The [Rhode Island Marine & Estuarine Invasive Species \(RIMEIS\) Site](#) provides information about the invasive species that threaten Rhode Island's marine and estuarine habitats in partial fulfillment of the outreach and education needs identified in the 2007 Rhode Island Aquatic Invasive Species (RIAIS) Management Plan. The [RIAIS Management Plan](#) was drafted by RI CRMC, RI DEM, RINHS, and URI, who along with several other organizations form the [RIAIS Working Group](#), to outline an invasive species strategy for Rhode Island and to assign outreach, education, prevention, monitoring, and management responsibilities to various environmental organizations around the state.

The extensive information and tools provided on [The RIMEIS Site](#) include species profiles, identification cards, professional education and outreach documents, links, and more.

- The [Rhode Island Land and Water Partnership](#) maintains an online [resource library](#) that includes a number of invasive species resources in addition to those listed above.

- In neighboring Connecticut, The [Connecticut Invasive Plant Working Group](#) (CIPWG) has developed an extensive database of information on invasive plants, including a [plant list with links to full color photos and detailed identification information](#) on The New England Wildflower Society's [Go Botany](#) plant identification website; an [Invasive Plant Management Guide](#) with species-specific management options for 17 common, persistent invasives; an early detection species list with many full-color photos; and links to numerous publications related to invasive species prevention, identification, and control as well as native alternatives.
- The **National Fish and Wildlife Foundation's (NFWF) Pulling Together** Initiative is a national public-private partnership that provides grant funding to help support the creation of local cooperative weed management area partnerships and the development and implementation of strategies for managing weed infestations on public lands, natural areas, and private working lands. Since 1997, Pulling Together has been able to award \$20.8 million, leveraged by an additional \$44 million in partner contributions, to 595 projects. In total, \$64.8 million has gone to local communities fighting invasive weeds.

The above resources provide a wealth of information on invasive species identification, biology, and management. The resources below focus on helping decision makers prioritize and plan invasive plant management activities. Prioritization is site specific and depends upon the plants and animals present, the conservation goals for the site, the size and accessibility of the invasive species, and a whole host of other variables.

- The Nature Conservancy's [Global Invasive Species Team \(GIST\)](#) provides numerous resources to help make invasive plant management as efficient and effective as possible. This includes a weed management plan template that provides guidance with prioritizing the weeds on a property, sample language to guide the land manager in writing a management plan, and an Excel workbook to help track the work and costs outlined in the plan.
- [Invasive Plant Management: Guidelines for Managers](#) (2008) published by The Trustees of Reservations in Massachusetts provides guidance to land managers and volunteers seeking to address invasive species problems. This includes providing a methodology for prioritization of control efforts that takes into account the extent of invasions and their relationship to sensitive areas, the availability of resources, and many other factors that must be assessed on a property-by-property basis.
- The [Handbook for Ranking Exotic Plants for Management and Control](#) is a joint publication of Ronald D. Hiebert of the National Park Service and James Stubbendieck of the University of Nebraska's Department of Agronomy. Although it was published in the 1990s, this document still provides straightforward ranking systems to determine the significance of the impact and the feasibility of control and to plot management priorities based on these combined rankings.
- NatureServe assigns U.S. Invasive Species Impact Ranks (I-ranks) to invasive plants based on the species' biological and ecological characteristics, ecological impact, distribution and abundance over time, and level of management effort. The data are no longer being developed or maintained, but already established ranks can be found with a quick search on the [NatureServe Explorer](#) web page. NatureServe also published [An Invasive Species Protocol: Evaluating Non-Native Plants for the Impact on Biodiversity](#) (Morse et al. 2004) as a tool for assessing the impact of non-native invasive vascular plants on native species and natural biodiversity over a large area (e.g. nation, state, ecological region).

4.5 WATER QUALITY RESOURCES

There are a number of organizations in Rhode Island working on monitoring and improving water quality in our waterbodies and watersheds. The following resources provide useful information on water quality across the state.

- The [URI Watershed Watch \(URIWW\)](#) is a volunteer water quality monitoring program that works with local communities to assess water quality in our lakes, ponds, streams, and coastal waters, to identify pollution sources, and to provide information that promotes more effective water resource management decisions across the state. URIWW scientists help local governments as well as watershed, tribal and other organizations recruit and train citizen scientists to assist with long-term monitoring efforts. The URIWW website contains extensive information on monitoring protocols and results and a whole host of other water quality resources.
- [Watershed Counts](#) is a collaborative initiative of 60 partners dedicated to “making sure Rhode Islanders can see and understand the trends in the environment and what needs to be done to protect and preserve these valuable natural resources.” Watershed Counts’ information is diverse, and addresses fresh and salt water quality and the factors, such as impervious cover and open space, that impact these. It also addresses watershed issues that extend landward, such as [invasive species](#), climate change, and natural resource economics. Watershed Counts produces annual reports on the status of the Narragansett Bay Region and also provides outreach materials on its website.
- **RI DEM’s Office of Water Resources** maintains a **Surface Water Quality webpage** that provides links to information on federal and [state regulations](#), guidance, and reporting related to water quality. One of these, the [2012 Lakes Report](#), contains an extensive assessment of the condition of the state’s freshwater lakes and ponds and associated invasive species and water quality concerns.
- [RI Environmental Monitoring Collaborative \(RIEMC\)](#) is an initiative of the Rhode Island Bays, Rivers, and Watersheds Coordination team, a state interagency commission focused on freshwater, marine, and watershed conservation and management in Rhode Island. RIEMC is responsible for developing and implementing a strategy for an environmental monitoring program for the state’s waters and shoreline. RIEMC provides annual reporting on its work and findings.

4.6 EDUCATION

Citizens need a firm grasp of the natural world in order to value and protect it, and today’s children are tomorrow’s decision-makers. The more comprehensive a child’s environmental education and the earlier it begins, the better. Formal and non-formal educators can incorporate natural resource and wildlife-based teaching into their everyday interactions with young learners. The programs and contacts below are an excellent place to start.



Photo by USFWS

- The [Rhode Island Environmental Education Association \(RIEEA\)](#) is a collaborative network of individuals and organizations committed to environmental education. Through its website, newsletters and meetings, RIEEA serves as a clearinghouse for information and resources related to environmental education events, programs and opportunities.

- The [Active Waters Education Curriculum and Training for Teachers -AWEsome!](#) was developed by the Southern Rhode Island Conservation District (SRICD) and the University of Rhode Island for teachers and students of grades 4 through 8. This curriculum offers a hands-on, experiential curriculum that engages people in issues and circumstances adapted to their own unique watershed. For more information, contact the Wood-Pawcatuck Watershed Association (WPWA), or visit WPWA's [AWEsome! Curriculum webpage](#).

- RI DEM Division of Fish and Wildlife's [Aquatic Resource Education \(A.R.E.\) Program](#) for children and adults is a federally funded program aimed at providing angler education, developing outdoor ethics, and increasing public understanding of the nation's water resources and associated aquatic life forms to promote stewardship and conservation. The A.R.E. Program is the state sponsor in RI for a number of nationally acclaimed educational programs as well as some smaller initiatives. Three of these are detailed below.



A.R.E. Coordinator Kimberly Sullivan with her Freshwater Ecology students, photo courtesy of RIDEM

- [Project WILD](#) is an international wildlife-focused conservation education program for students and educators of kindergarten through high school, and [Growing Up WILD](#) is its early childhood education counterpart. Project WILD programs emphasize the integral connection between people and *all* wildlife, big and small. Through educational materials and trainings, these wildlife-based

conservation and environmental education programs foster the development of a conservation ethic that promotes responsible actions toward wildlife and related natural resources.

- The [Project WET](#) (Water Education for Teachers) Foundation envisions “a world in which action-oriented education enables every child to understand and value water, ensuring a sustainable future.” They work toward this goal by publishing comprehensive water resource education materials appropriate for many different age groups and cultures; providing training workshops to educators at all levels; organizing and inspiring community water projects and events; and building an international network of water resource professionals and advocates to promote education as a tool for solving water issues worldwide. As part of the resource education materials, Project WET has developed many diverse lesson plans, activities, maps and posters, and other materials available on the [Teach and Learn](#) section of their webpage.
- The [Narragansett Bay National Estuarine Research Reserve](#) (NBNERR) provides many [educational opportunities](#), including [Teachers on the Estuary \(TOTE\)](#) training. The goal of this program is to improve teachers’ and students’ understanding of the environment using local examples, to provide resources and experience to support the incorporation of estuary and watershed topics into classroom teaching, and to promote stewardship of watersheds and estuaries.

The Estuaries 101 curriculum used for the TOTES training is available through [NOAA](#). Refer to the [NBNERR webpage](#) for more information on their educational programs.

- [Project Learning Tree®](#) is another award-winning environmental education program for preschool through grade 12 that introduces complex environmental issues and teaches critical thinking and problem solving skills needed to address them.
- The [Rhode Island Envirothon](#) program teaches middle and high school students about aquatic ecology, forestry, soils/land use, and wildlife and provides an opportunity to showcase the skills and knowledge acquired during the school year in an annual outdoor RI Envirothon Competition.
- The [Audubon Society of Rhode Island](#), [The Nature Conservancy](#), [Rhode Island Wild Plant Society](#), [RINHS](#), [Roger Williams Park Zoo](#), the USFWS [National Wildlife Refuge System](#), and [Save the Bay](#) all have long-standing, sustainable conservation programming. Refer to these organizations for further information.
- Increased public acceptance would result in substantial conservation gains for a number of misunderstood species. Fostering understanding and dispelling longstanding myths can reduce persecution of such species and increase their ability to withstand other threats. Bats and snakes are two groups that might benefit from such efforts. Below are a few resources to get started.
 - [Bats](#)
 - Provide residents with the facts about rabies and [rabies prevention](#). Rabies is a very serious virus, which all mammals are capable of carrying, but the misconception that all or most bats are rabid (the actual occurrence is estimated at less than 1%) or that rabid bats will attack humans unprovoked has created unnecessary fear of these interesting and important creatures.



Big Brown Bat (*Eptesicus fuscus*), photo by C. Brown

- Hold an educational forum on bat conservation and train residents to identify maternity and foraging colonies. An outcome of such efforts may include conservation easements on lands/areas that support these habitats or placement of artificial bat house structures.
 - In addition to [RI DEM Division of Fish and Wildlife](#), [Bat Conservation International](#) is an excellent resource for information on bats and ways to help improve their conservation status.
- **Snakes**
- [Northeast Partners in Amphibian and Reptile Conservation](#) (NEPARC) has many resources, including [Habitat Management Guidelines](#) for the northeast available at no cost (except shipping) and a North American reptile and amphibian [Inventory and Monitoring Guide](#).
 - RI DEM Division of Fish and Wildlife's [Native Snakes of Rhode Island](#).



Eastern ratsnake (*Pantherophis alleghaniensis*), photo by C. Raitel

4.7 WAYS TO MINIMIZE YOUR IMPACT ON FISH AND WILDLIFE AND SET AN EXAMPLE FOR OTHERS



Children with Spotted Salamander (*Ambystoma maculatum*), photo by C. Buder

➤ **Teach the children (and willing adults) in your life to understand, love, and respect wild animals and special places.** You don't need to be an expert; just share whatever is dear to you with those around you. We only make an effort to protect what we appreciate and understand. Too many people feel removed from nature, seemingly unaware of their dependence upon it.

➤ **Manage your property as habitat.** In a state where so much of the land is privately held and divided among many owners, the individual landowner can positively impact wildlife by minimizing lawn area and maximizing forest. [DEM's Forest Stewardship Program](#) and [RHODE ISLAND Woods](#) have helpful information for forest landowners. Whether a large or small landowner, consider leaving part of your yard wild and natural. If it's already all lawn, consider replacing any portions that go unused with native plants. A *Rhody Native*[™] tag identifies plants that are genetically local and genetically diverse native plants.

- Consider providing water and cover (brush piles, etc.).
- Wait until fall to trim trees and shrubs or mow fields to minimize impacts to nesting birds and dispersing young.
- Show the improvements made to your neighbors and encourage them to follow your example. The arrival of beautiful new birds and butterflies may even do the convincing for you!

Douglas W. Tallamy's [Bringing Nature Home](#), URI Cooperative Extension's [RI Native Plant Guide](#), the [Ecological Landscaping Alliance \(ELA\)](#) and the National Wildlife Federation's [Certified Wildlife Habitat Program](#) are all great resources for creating habitats with native plant species.

➤ **Minimize use of pesticides and fertilizers** and look for products grown according to these same standards. Targeting a single "pest" species often has unintended and undesirable consequences. For example, pesticides reduce food availability for birds by reducing insect diversity. Many of these chemicals harm wildlife, especially bees, butterflies, and other beneficial insects, and they often find their way into our local waters, causing algal blooms and other problems. Integrated Pest Management (IPM) is one alternative that relies on the science of pests, their life cycles, and their broader relationship to the environment to derive environmentally sensitive management approaches that minimize pesticide use. Incorporating organic methods such as composting and leaf mulching can give you great results without posing any risk (or costing any money) at all.

If you do use chemicals, read and follow label directions. Pesticide labels are written to help users maximize the chemicals' benefits while avoiding harmful effects to non-target organisms. Also, it is a federal crime to deviate from label directions.

➤ **Encourage good stewardship throughout your community.** Support wildlife habitat-friendly legislation and sound, science-based wildlife management. Support your local businesses if they are practicing good stewardship, and gently nudge them if they are not.

- **Educate yourself and be an ingredient reader.** Remember that *everything* we use, indoors and out ends up in our environment. From where we wash our cars, to the food we eat, to the laundry detergent we choose, we make choices every day that affect local (and sometimes not-so-local) water quality and the humans and wildlife that rely on those waters.
- **Keep dogs away from wildlife.** Respect signage that restricts or disallows pets. Dogs can cause many problems for wildlife (e.g., stress, disease, predation). Whether posted or not, dogs should be leashed or otherwise under control when walking through forests and other wildlife areas, especially during the breeding and nesting seasons.
- **Keep cats indoors.** According to the American Bird Conservancy (ABC), domestic and feral cats kill an estimated half to one billion birds a year in the United States. Putting a bell on a cat may seem like a reasonable solution, but cats can learn to walk silently while wearing a bell, and birds do not register a ringing bell as a warning sound. Outdoor cats also kill snakes, amphibians, and small mammals.
- **Be informed and support local conservation.** Conservation includes protecting natural areas in perpetuity, but it also means making sure that development that does occur is well planned, makes sense on the landscape, and is as people and wildlife-friendly as possible. As undeveloped land becomes rarer, protecting habitat is increasingly vital to fulfilling our responsibility to conserve wildlife and the places they live for future generations. Luckily, many of the same measures that help our local wildlife also help keep our air and water clean and preserve community character.
- **Don't release pets into the wild.** Many people think it is harmless to drop aquarium fish, frogs or turtles into local ponds; however, animals from the pet trade don't appreciate the gesture (and in many cases, it's illegal). They often suffer and die when released into the wild, while those that are successful can disrupt the existing ecosystem and may prove invasive. They also may introduce diseases that are new to an area and that native species aren't equipped to fend off.
- **Be a waste watcher.** Of course you shouldn't litter and you should try to recycle as much as possible, but it's also important to reduce your waste in the first place by avoiding single use products and packaging as much as possible. Most of what goes into our recycling bins is not infinitely recyclable and eventually becomes trash. According to the EPA, plastics and other marine debris not only cause direct harm to marine species (ingestion, laceration, entanglement, suffocation), but also degrade habitat, harm tourism and fishing (reduced stock, damage to gear), and present a safety hazard that can damage boats and even injure humans.
- **Minimize light pollution and save on your energy bill while you save birds, bats, and other wildlife.** Turn off outdoor lights and draw the curtains/blinds at night, especially during peak migration seasons (spring and fall). Since migrating and nocturnal birds rely on the moon, stars, and setting sun for navigation, artificial lighting can attract these birds and cause them to collide with buildings and other tall structures. The American Bird Conservancy (ABC) has stated that hundreds of millions of birds die each year from strikes with manmade structures. Birds can also become confused by reflections on windows during the day. [ABC's website](#) has a lot of good information on how to avoid bird strikes around the home, including treating windows so they don't fly into the glass. While birds are perhaps the most studied example of the impacts that artificial lighting can have on behavior, this type of pollution disrupts the natural rhythms of many species of plants and animals. An obvious example is all the harmless insects that are drawn to outdoor lights. The loss of these animals means less butterflies and moths and less food for birds and bats.

You could also advocate for a “Lights Out” ordinance in your community or start a voluntary Lights Out pledge campaign. Block Island was the first Rhode Island town to pass an outdoor lighting ordinance in 2000. In 2012, Charlestown passed its own [ordinance](#) with both mandatory and recommended voluntary provisions. For additional information on the effects of artificial lighting and how to minimize them, the [International Dark-Sky Association](#) is an excellent reference.

- **Don’t feed wild animals.** If done responsibly, feeding backyard birds is not harmful. However, feeding waterfowl and other wildlife or leaving pet food out and accessible can cause numerous problems. It encourages dependence on humans and the loss of their natural fear of us. Both of these situations create increased conflicts between humans and animals, which can be dangerous for both. Animals that are fed, such as ducks, geese, and deer, tend to congregate much more tightly than they otherwise would. Add to that the replacement of their nutrient dense natural diet with empty calories from human food, and these cramped conditions lead to increased diseases, some of which can be spread to humans. Accordingly, with a few exceptions that include most bird feeders, *feeding wild animals is illegal in Rhode Island*.



Red Fox (*Vulpes vulpes*) at Sachuest Point NWR, photo by USFWS

- **Drive slowly and alertly on rural roads and especially within state wildlife management areas.** Vehicle strikes are a major threat to a large number of Rhode Island's wildlife species.
- **Be respectful and keep your distance.** Make every effort to enjoy our local plants and animals in a manner that leaves both of you safe from harm. Most of the time people try to assist injured, sick or orphaned animals; they end up doing more harm than good. People often misunderstand the behaviors and cues of wild animals and end up causing stress or injury to animals that were not really in need of help. Even simple things like trying to get a great photograph can be hazardous to an animal that is stressed (examples are birds looking for food before a long flight and wintering bats, both of which may not survive if forced to expend energy avoiding a perceived threat). [Ethical guidelines for birdwatching](#) have been promoted by the American Birding Association. Several summaries of [ethical conduct during wildlife photography](#) also exist.
- **Don’t pass on your prejudice.** So you simply can’t get over your fear of spiders, or snakes, or bats even though you know deep down that your fear is not grounded in fact? Try not to pass this fear on to your child, niece, or nephew. Instead of using words like “creepy” and “gross”, encourage children’s innate curiosity and love of the natural world. You can still teach them to keep a respectful distance. This way, you can feel good about doing your part to protect important critters even if you can’t quite get past your own trepidation!

For an abbreviated, easy-to-share list of actions, refer to the [15 Small Things that Make a Big Difference for Wildlife](#) handout.

- The [RI DEM Wildlife Quiz](#) is a fun and simple way to get people thinking about their relationship to the natural world.
- Arm yourself with the statistics on smart growth and the cost of sprawl. One of the most common arguments against conservation actions is that any impediment to development hurts the local economy, so it is important to make sure people understand the necessary distinction between high and low density development and have access to reliable information about the real ways in which development impacts local economies for better or worse. This topic has been tackled by

governments (e.g., [The Council on Environmental Quality, Department of Housing and Urban Development, and Environmental Protection Agency](#)) and non-profits (e.g., [The Sierra Club, Grow Smart Rhode Island](#)) alike.

- Look for avenues to get your message out. Municipalities should strive to maintain good relations and communications with their local land trust(s). Invite them to display their newsletters and brochures at the town hall, library, and public events as well as to provide a summary of their work and future plans in your town's Annual Report.
- Make copies of resource maps with Conservation Opportunity Areas and documentation available to the public so they are able to familiarize themselves with the information. Display them in public spaces.
- Undergo a public education campaign to alert people to the specific wildlife issues in your town. For example, if you have a pond in your community where water quality is an issue, take care to make sure that residents know it is illegal to feed waterfowl in Rhode Island and the reasons why. Make the connection between seemingly harmless habits and closed beaches so they understand the importance of their decisions. RI DEM DFW informational publications ([available online](#)) are an excellent place to start.

4.8 ADDITIONAL RESOURCES

- [Rhode Island Wildlife Action Plan \(RI WAP\) Community Liaison](#)
Sometimes, it's important just to be able to talk to another person and be able to ask your questions or to exchange ideas and information. The need for this human component to wildlife conservation in Rhode Island was identified during the original drafting of RI WAP. In response to the consensus of the more than 50 stakeholder groups contributing to the 2005 plan, a partnership between RI DEM and the Rhode Island Natural History Survey (RINHS) recently created a position for a Rhode Island Wildlife Action Plan (RI WAP) Community Liaison. This is a collaborative project of the RINHS, a non-profit organization, and the RI DEM undertaken to promote participation by municipalities and other community interests in the development and implementation of the 2015 RI WAP.

The RI WAP Community Liaison is available to assist with information gathering, to provide technical and mapping assistance, to serve as a link to wildlife professionals and other resources, and to provide training and/or outreach at various events and venues and on numerous conservation-related topics. The liaison can also help you to design and conduct your own outreach to take to local audiences. Outreach not only helps to educate the public and enhance awareness of the natural resources in your town, but keeping citizens informed can also help you build support for your conservation goals and projects. If you want citizen support, it is so important to promote understanding of the benefits associated with your conservation plans.



Galilee Boat Ramp in Narragansett, photo by V. Masson

- **[The Rhode Island Division of Planning/Statewide Planning](#)**
The Rhode Island Division of Planning within the Department of Administration provides centralized state planning, including the establishment of statewide goals, policies and actions for natural resource protection. The Division's Statewide Planning Program staff also provides guidance and support on topics such as land use, comprehensive planning, and transportation. See [Chapter 3](#) of this guide for more information on the Division of Planning's work and more useful links.
- **[Rhode Island Land Trust Council \(RILTC\)](#)**
The Rhode Island Land Trust Council provides a wealth of technical resources, expertise, and advice not only to its members, but to the public as well. The [Resources](#) section of the RILTC's website in particular contains important information about some state and federal land protection programs as well as an online resource library that addresses conservation topics such as invasive species, habitat restoration, and forest management to name a few. See [Chapter 3](#) of this guide for more information on the role of land trusts in conservation.
- **[Rhode Island Association of Conservation Commissions \(RIACC\)](#)**
"Through cooperative effort, education, collaboration, support and partnership, conservation commissions statewide can be the voice and direction of sound environmental practices. RI has state enabling legislation that calls for each town to have some sort of "environmental advocate"... see if you have a local ordinance already on the books founding such a board or commission..." The Rhode Island Association of Conservation Commissions' webpage contains helpful information, including links to many conservation commissions' websites and advice on [how to start and conduct a conservation commission](#) if you live in one of the seven RI municipalities that lacks one. See [Chapter 3](#) of this guide for more information on the role of conservation commissions in Rhode Island.
- **[Rhode Island Conservation Districts and Key Partners](#)**
The [Rhode Island Association of Conservation Districts](#) (RIACD) provides guidance and assistance and garners financial support for RI's three conservation districts so that they may carry out their stewardship of the State's natural resources through education, outreach, and technical assistance. The conservation districts provide valuable information, assistance, and programs to help Rhode Islanders understand and improve resource conservation issues in their backyard. All of these districts work hand-in-hand with [NRCS's Rhode Island Office](#) to deliver state and federal conservation programs and technical assistance to landowners. NRCS and the Districts also work closely with the [Rhode Island Resource Conservation & Development Area Council, Inc.](#) (RIRC&D) to assist with projects that promote resource conservation and community development.

[Northern Rhode Island Conservation District](#) (NRICD) – Providence County

[Southern Rhode Island Conservation District](#) (SRICD) – Kent and Washington Counties

[Eastern Rhode Island Conservation District](#) (ERICD) – Bristol and Newport Counties

Additional organizations that may provide useful resources can be found in [Chapter 7 of the RI WAP](#).

*“Ah yes, the head is full of books.
The hard part is to force them down through the bloodstream and out through the
fingers.”*
~ Edward Abbey

Conclusion

The Wildlife Action Plan provides the information we need to understand the scope of the problem and its diverse solutions. This companion guide makes that information more accessible to busy Rhode Islanders, all of whom are needed to secure a bright future for our fish and wildlife and the natural areas upon which they depend. Local conservation can encompass any number of scales, be it regional, neighborhood, or back yard and all of them are important. There are so many ways to lighten our impact on wildlife, and the best time to start is now!



Gray Treefrog (*Hyla versicolor*), photo by J. Osenkowski

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Appendix: Wildlife Habitat Protection Checklist

Community Habitat Maps

1. Have you viewed the Conservation Opportunity Areas (COAs)* developed for your community? If no COAs have been identified, locate the largest undeveloped areas that remain in your community as well as vegetated areas along waterways.
2. Has your community included the habitat areas listed above into open space priorities to be permanently preserved by land acquisition?

Community Comprehensive Plan

3. Does your community comprehensive plan contain a map of the habitats identified in question 1?
4. Does your community comprehensive plan include habitat as a priority for land acquisition?
5. Has your community established clear goals, objectives and policies to preserve habitat and avoid and reduce the impacts to habitat from new development?
6. Has your community identified areas where increased density is appropriate and encouraged to take the development pressure off of natural areas?
7. Has your town recognized the need to give large land owners the flexibility needed to establish appropriate businesses to help keep these parcels from being developed?
8. Do you have a clear policy that allows land owners to participate in the Rhode Island Farm Forest and Open Space Act?

Land Use Techniques to Preserve Open Space and Habitat

9. Has a transfer of development rights ordinance been adopted to provide an incentive for land owners to preserve natural areas and to use development to pay for the preservation of open space? (Refer to the *Rhode Island Transfer of Development Rights Manual DEM 2015* for more information)
10. Has a conservation development ordinance been adopted to guide growth away from important habitat and establish corridors to connect habitat by preserving a minimum of 50% of a parcel as permanently protected open space? (Refer to the *Rhode Island Conservation Development Guidance Manual DEM 2003* for more information)
11. Has a Rural Residential Compound ordinance been adopted that encourages land owners to build fewer houses as a tradeoff for smaller lots, private road, and the preservation of 50% of the parcel?

*Conservation Opportunity Areas, a tool developed as part of the 2015 RI Wildlife Action Plan (RI WAP), include undeveloped forest lands greater than 250 acres, corridors that connect these areas, and other important habitat (natural heritage areas, ecological land units, etc.) You may access the maps here:

<http://ridemgis.maps.arcgis.com/apps/webappviewer/index.html?id=63f3ef956b3e4711ab3f8dd8349f346e>

12. Has a village ordinance been established to concentrate growth in the most appropriate areas to reduce development pressure on natural areas? (Refer to *Village Guidance: Tools and Techniques for Rhode Island Communities* DEM 2015 for more information)
13. Did your town adopt the recommendations from *Community Guidance to Maintain Working Farms and Forests* (DEM 2012) to give owners of farm and forest land the option of creating appropriate small businesses as an incentive for preserving their land?

Land Use Regulations to Avoid and Reduce Impacts to Habitat

14. Are limits of disturbance required to be marked on all construction plans to minimize the loss of natural areas?
15. Do regulations require or encourage new lots to exclude wetland jurisdictional areas to the extent practicable?
16. Has a community buffer program been created to establish or restore a naturally vegetated buffer system along all surface waters and wetlands?
17. Are zoning setback distances flexible to avoid requiring new lot locations to be unnecessarily close to surface waters, wetlands and riparian corridors?
18. Has your community adopted an erosion and sedimentation control ordinance?
19. Have you amended regulations to require all development projects comply with Low Impact Development (LID) pursuant to the Rhode Island Stormwater Design and Installation Standards Manual?
20. Has your community adopted a forest cover, tree protection or tree canopy ordinance?
21. Has your town adopted a review and inspection fee provision in your subdivision regulations to hire the expertise needed, including wildlife biologists, to carefully evaluate development proposals and offer recommendations to avoid and reduce impacts to habitat as well as community character?