

Audubon At Home
in Northern Virginia

THE NATURE OF CHANGE

*Preserving the Natural Heritage
of a Dynamic Region*



Audubon At Home in Northern Virginia — The Nature of Change :
Preserving the Natural Heritage of a Dynamic Region

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Front cover photos, clockwise from top left:

Mouth of Marumscro Creek (J. WAGGENER); Bald Eagle (K. MUNROE);
Butterfly class, Meadowlark Gardens (J. WAGGENER); New residential street (J. WAGGENER);
Manassas Battlefield Park (ASNV / L. STEPHENS); Young fox (J. WAGGENER)

Back cover photo: J. WAGGENER



Preface

This book is concerned with Northern Virginia and a natural environment that seems destined to become more and more unnatural. Happily, it is also about people who are taking steps, large and small, to reverse this trend.

That Northern Virginia is known as one of the fastest growing regions in the nation isn't news to anyone who has lived or visited here in the past few decades. A swelling population and changing landscape of spreading suburbs, satellite cities and ever expanding highways, the daily increase in traffic and seemingly insoluble issues of air and water quality — it might be thought that this is the true “nature” of life in Northern Virginia. We're fortunate it is not, at least not yet. Even in the midst of such rapid, widespread change, there are places where remnants of this region's natural heritage persist and places that determined people are making hospitable again to native wildlife.

Whether you are a longtime resident or newly arrived, whether your interests run to gardening, birds, butterflies or any other aspect of the natural world, we hope you will be encouraged by the ideas and examples you find here to take more of a role in the essential work of conserving the authentic nature of Northern Virginia.

Audubon At Home in Northern Virginia, a project of the Audubon Society of Northern Virginia, is supported by a federal grant to the National Audubon Society through the United States Department of Agriculture's Natural Resources Conservation Service. The purpose of this project is to draw attention to the nature of this region; encourage creation, preservation and enhancement of quality natural areas; and promote healthier wildlife habitats for homes and communities.



K. MUNROE



K.WYCHULIS

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J. SCHUMANN

About Audubon

When John James Audubon died in 1851, he had gained fame for his elegant portraits of America's birds and other wildlife in their natural habitats. His perspective and methods were unique, and his reputation has endured, making his art a rich legacy for all who wish to glimpse what he experienced. Regrettably, much of the natural world Audubon sought to fix in those vivid images has not endured.

Through Audubon's art, however, people began to see and appreciate birds in new ways, to value them, and to be concerned about their fate. By the 1880s, his name had become the banner under which a major conservation movement was taking shape. It started as revulsion at the heedless slaughter of wild birds for their feathers. In a classic grassroots effort, Audubon clubs and supporters secured state and federal legislation to suppress the feather trade and, in 1903, influenced President Theodore Roosevelt to establish the first federal wildlife refuge. In 1905, the National Association of Audubon Societies was organized, paving the way for a century of new challenges, opportunities and successes in campaigns to conserve birds and other wildlife and their habitats.

Today's National Audubon Society and a broad network of state and local chapters remain committed to addressing environmental problems ranging in scale from neighborhood to global. The heart of the Audubon effort has always been in helping individuals make a difference in their communities. As a new century begins, the Audubon At Home initiative is helping people bring nature back to their homes and communities.

The Seattle Audubon Society's book and program, *Audubon At Home in Seattle: Gardening for Life*, illustrate a range of practical ways that people in that area have used to create more natural habitats around their homes. The Audubon Society of Northern Virginia is addressing these and related conservation issues for this region with *Audubon At Home in Northern Virginia*. We are gratified at the response to this effort and delighted at the number and variety of ways Virginians are finding to "naturalize" and nurture our local environment.

Northern Virginia — Then and Now

“Virginia’s flora and fauna are among the most diverse to be found anywhere in the temperate latitudes of the earth. Yet as Virginia is transformed into an almost purely cultural landscape, the rich natural history of the Commonwealth is increasingly threatened; many native species of plants and animals stand to be greatly reduced in numbers or eliminated.”

A Guide to Endangered and Threatened Species in Virginia,
Virginia Department of Game and Inland Fisheries, 1994

Ask people about Northern Virginia, and they probably will begin describing present day cities and counties such as Arlington, Alexandria, Falls Church, Manassas, Leesburg, Fairfax, Prince William, Loudoun, a list of names evocative of a rich cultural heritage and contemporary economic development. Others might describe the region in geographical terms: its area of a thousand square miles or more, topography of coastal plain and rolling foothills, temperate climate, connections to the Chesapeake Bay, or its suburban demographics. Because of all the recent changes in the landscape, only a few might think to describe Northern Virginia in terms of the diversity and abundance of its biological resources.

There have always been changes, of course. The last 25,000 years have seen the end of an Ice Age, the gradual exchange of a northern climate for a more temperate one, replacement of coniferous by deciduous forests, and a rise in sea level that created the Chesapeake Bay. But four hundred years ago, this area was a mature ecosystem with a landscape virtually covered by a nearly seamless hardwood forest of oak, chestnut, hickory and walnut. In scattered open spaces created by wind or fire, grasses and scrub species proliferated. Streams coursed from the western uplands to freshen the coastal plain’s tidal inlets and marshes. The land and waters supported diverse and abundant wildlife — bears, wolves, bison, fish and amphibians, waterfowl, wild turkeys and other woodland birds, including the now-extinct passenger pigeon. Pure air, pristine water, the sights, quiet and clamor of primordial nature would have been our experience had we accompanied Captain John Smith as he ascended the Potomac River on the first known European exploration of this area in 1608.

While the impact of Native American culture on the environment had been relatively slight, European settlement was different. It began slowly, but within a hundred years Native Americans had been totally displaced, much of the land had been cleared along the shores of navigable waterways, and the cultivation of tobacco begun. Before another century passed, forest clearing, a succession of ruinous agricultural practices and the resulting erosion had changed the character of the land and the waters. Much of the original wildlife disappeared as alterations of the natural environment continued with little pause during the 19th and early 20th Centuries. The pace accelerated dramatically in the “Age of Development” that came to this region in the 1950s.

Morning on woodland trail



J. WAGGENER

The Potomac gateway for exploration and change

Pure air, pristine water, the sights, quiet and clamor of primordial nature would have been our experience had we accompanied Captain John Smith as he ascended the Potomac River on the first known European exploration of this area in 1608.

Marina



J. WAGGENER

A traveler to Northern Virginia, today, seeing the sum of these changes, could be forgiven for thinking little is left of the old nature. The original forest is certainly gone. Streams and rivers are lined with residences and marinas. Agricultural lands that once replaced woodlands are being replaced in turn by acres of pavement and rooftops. Open spaces seem to consist largely of a monoculture of manicured grass or other non-native vegetation. Wildlife might be thought to consist of pigeons, starlings, squirrels and cats. The quality of the air and water is troubling. The ambient sound is that of traffic.

Too bleak a picture? Arguably, for many places in Northern Virginia it probably is about right. But isn't this region considered one of the most desirable places to live in the country? Unquestionably, it is, and rightly so. With its proximity to the District of Columbia, its fine communities and services, Northern Virginia will continue to attract new businesses and residents. However, a part of

the price we pay for having some of the nation's fastest growing counties is the daily loss of open space to new development. Inexorably, our natural environment is being diminished in quantity and quality by the patterns and practices of life in Northern Virginia. This should prompt our traveler, and us, to ask: "Can't something be done to change this?" §



J. WAGGENER

Changing Northern Virginia

“Land use change in the United States represents an enormous experiment in the ways habitat changes influence plants and animals. When cities were built, land was plowed, or forests were cut, the effects on our native biota were not considered.”

Status and Trends in the Nation's Biological Resources, Vol. I, U.S. Geological Survey, 1998

Changes that began with the clearing of land for homes and agriculture, in the aggregate, transformed the face of this region and even its natural workings. Clearing the forest cover opened the land to erosion, and the streams, once pristine, became laden with silt. In Prince William County, for example, by the eve of the American Revolution people were referring to Catamount Creek as Muddy Gut, and by 1787, siltation forced relocation of the port of Dumfries, which never regained its former prominence or prosperity. Throughout the region, the customary practice of using up a piece of land and moving on to another led quickly to the demise of the original forest. Photos from the Civil War period reveal just how extensive the clearing had been.

Agricultural fields and a sprinkling of small towns were the predominant landscape features of Northern Virginia well into the 20th Century. Although that began to change with the World War II-era's boom of residential building around Arlington and Alexandria, it was in the 1960s, spurred by the opening of the Capital Beltway, that land conversion began again in earnest. This time it was Fairfax County's agricultural fields and edges disappearing to make way for the impervious surfaces and managed landscapes of suburbia. Despite irritants like traffic congestion, the perceived social benefits of suburban life have remained a powerful stimu-



J. WAGGENER

Rural Piedmont

The leading edge of the development frontier



J. WAGGENER

There is a permanence about today's changes that was missing in what went before.

lus to more building. As aging suburbs lost their appeal, development followed the same old pattern of opening new land, and the frontier of suburban sprawl moved on. Roads built to handle congestion became pathways for new projects and more traffic, so that counties like Prince William and Loudoun, even Stafford and Fauquier, which not long ago were considered rural, now must deal with all of the special problems of suburbia. With the continuing loss of scores of acres of open space every day to new development, the transformation of Northern Virginia to a largely altered, managed environment is far advanced. Nowadays, many residents and officials recognize the sociological downsides of the suburban experience, but fewer may appreciate the environmental costs.

The clearing of original woodlands degraded or eliminated a mature, complex, enormously productive and sustainable ecosystem. With forest fragmentation, wildlife communities were disrupted or displaced. The soil, stripped of forest cover and tilled exhaustively, lost valuable natural nutrients. Streams were degraded. Wetlands were drained and, without their filtering action, harmful nutrients passed right into the Potomac and Chesapeake Bay system. Habitats were changed further by the introduction of non-native plants. Native species of birds and other wildlife that were able to hang on did so in woodland remnants, old agricultural fields and hedgerows.

Below, left to right:

- Hedgerows: Habitat for wildlife
- Impervious surfaces
- Eroded stream bank



J. WAGGENER



J. WAGGENER



C. THOMPSON-DEAHL

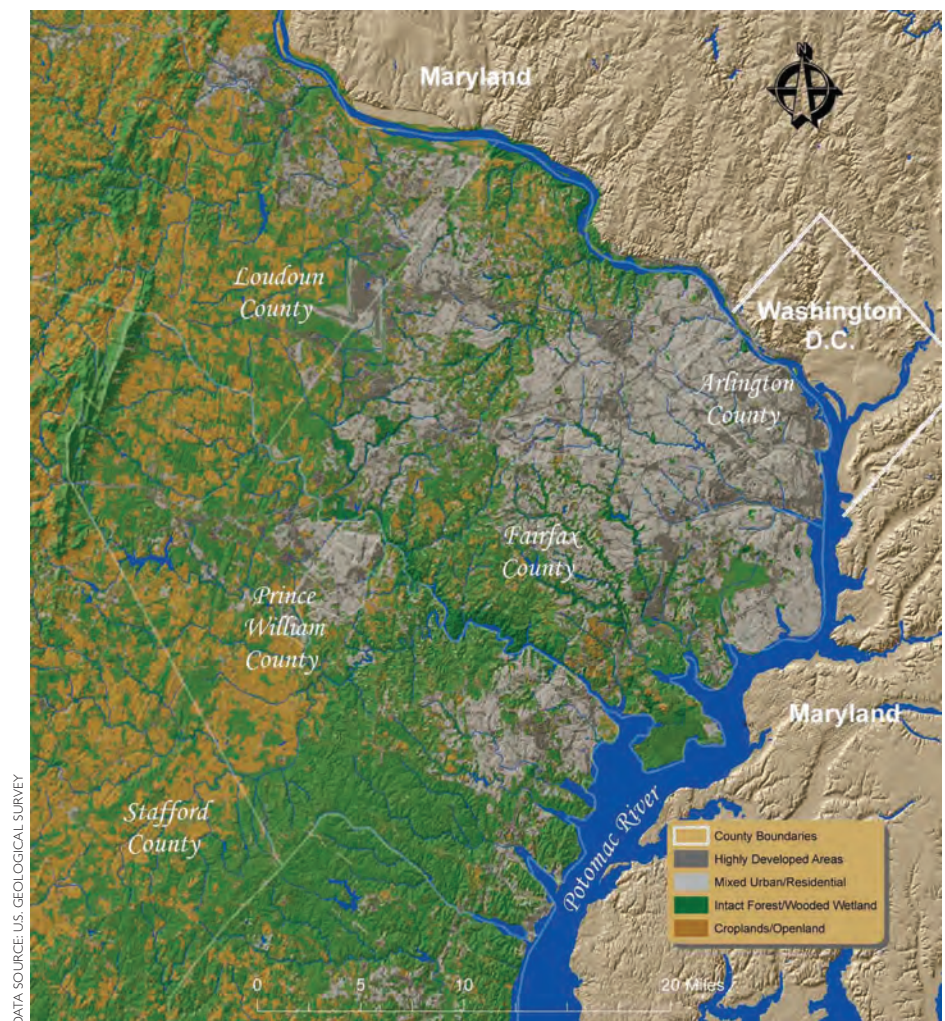
Development patterns of today leave even fewer escape hatches for wildlife. Earlier, land that ceased to be productive for agriculture could regain a measure of usefulness to wildlife if left undisturbed and vegetative succession was allowed to occur. The succeeding growth of grasses and shrubs (often from dormant seeds of native species) and new woodlands would bring back some diversity of habitats and species. Things are different now. Old fields converted to roads and shopping centers will see no such succession. There is a permanence about today's changes that was missing in what went before.

Finally, a range of contemporary practices — littering, maintaining expansive lawns, cultivating exotic and invasive plants, watering excessively, misusing fertilizers and harmful pesticides, driving unnecessarily, letting cats roam outdoors — constitute a sort of acid drip that further degrades remaining open spaces and wildlife habitats.

Can something be done to change this? The answer, of course, is “Yes.” No one should expect to remedy overnight the accumulated environmental insults and neglect of four centuries, but there are important steps we can take to begin that process. One way to start is to take stock of our region's natural areas. §

The transformation of Northern Virginia to a largely altered, managed environment is far advanced.

A macro view of the changing character of Northern Virginia



Rediscovering the Nature of Northern Virginia

Dogwood blossoms



J. WAGGENER

If you look beyond all of Northern Virginia’s cultural features, you can see the inherent beauty of its nature: blossoming redbud and dogwood against the first greening of spring, the restless hum of summer life, the glory of autumn color, the dramatic contrasts of winter. Roam our woods and fields, wetlands and edges, and you can still encounter a surprising number of the many native plants, birds, butterflies, dragonflies, amphibians, mammals and other wildlife that have managed to survive and carry on their ancient routines. Looking for nature, however, will probably make you more conscious of how much of it we are losing.

You need not have lived here for long to sense a loss of nature. The farm that used to be down the road; the neighborhood open space everyone took for granted; the nearby stream that once ran clear; the trees that disappeared one morning. Just about anywhere you live there are once-conspicuous species of local wildlife that are now conspicuous by their absence. Is there anywhere in the inner suburbs where you can find otters at play or see resplendent red-headed woodpeckers?

How far must you go to hear the “bobwhite” call of quail and the lilting notes of meadowlarks? How many suburban woodlands echo the fluting calls of wood thrushes?

For those of us who call Northern Virginia “home,” there are still places where, to a degree, we can find reminders of an earlier natural environment, even something of the vibrant nature John Smith experienced in his day. Such places persist on some private holdings, particularly in outlying, more rural areas and in a tracery of lands held by various public and private agencies.

For perspective on the latter and to rediscover Northern Virginia’s natural heritage, let’s follow the path of early exploration along the arc of the Potomac River.

The Potomac Margin

It may surprise some that the owner of the greatest amount of natural open space in this region is the U.S. Department of Defense. With 50,000 acres of largely undeveloped land spreading into two counties, Quantico Marine Corps Base is a



J. WAGGENER

Above: Chopowamsic Creek’s tidal marsh, Quantico MCB

Opposite: Bald Eagle nest, Occoquan Bay NWR

storehouse of natural habitats and wildlife communities. Much of it must be closed to the public, obviously, but not all. You can get a taste of Quantico’s nature by walking the trail that’s open along the Prince William side of Chopowamsic Creek as it flows into the Potomac. From here, you’ll have views of bottomland woods and tidal marshes where resident and migratory waterfowl and songbirds forage and breed with little disturbance.

Next door to Quantico is the National Park Service’s Prince William Forest Park. This largest of area parks, with more than 15,000 acres of uplands and wetlands covered by mature hardwood forest, lies, like Quantico, on the Fall Line that marks the extent of tidal influence, the divide between the Coastal Plain and the Piedmont. The forest in this park is not original, but it conveys some sense of what that might have been like. When first acquired by the federal government in the depression years this was well-used agricultural land. It’s a case study in how vegetative succession can renew open areas. Today, species of woodland flora and fauna that have been displaced from more developed areas are able to thrive in this regenerated habitat. The park and Quantico, with the extent and variety of their habitats and wildlife communities, contribute enormously to the retention of Northern Virginia’s special natural character.

Further north in Prince William County, bounded by Powell’s Creek and Neabsco Creek, is Leesylvania State Park. This was once a plantation of the famous Lee family of Virginia. It is now heavily used by recreational boaters because of its easy access to the Potomac. That notwithstanding, from here rafts of thousands of wintering waterfowl may be seen on the river and nearby creeks. The park’s wetlands and woods attract many migrating and breeding birds.

Move north again to where the Occoquan River joins the Potomac, and you’ll come to the Occoquan Bay National Wildlife Refuge. Clearing and farming of this land began in the mid-1600s and continued for almost 300 years. It was used as a military base for 50 years before becoming, through resolute advocacy, a national wildlife refuge. This is another example of how resilient land can be if left to natural processes. Old fields, earlier used for agriculture and later kept mowed by the Army for military purposes, now provide rich meadow habitat, which is increasingly scarce in this region. The commingling of woods, meadows, tidal wetlands and shoreline within this relatively small refuge makes it a microcosm of regional habitats and accounts for its attractiveness to an unusual diversity of birds and other wildlife.

The Occoquan Bay Refuge can be seen as a small piece of a diverse and productive ecological area around the mouth of the Occoquan River. The larger piece is the complex of preserved open space on Mason Neck. Thanks to years of persistent, effective advocacy by residents, Mason Neck contains some of the best protected natural areas in Northern Virginia — two federal holdings, a state and a regional park, and a national historic landmark (Gunston Hall). The woodlands and wetlands of Mason Neck State Park and Mason Neck National Wildlife Refuge have been instrumental in the successful recovery of this region’s

It may surprise some that the owner of the greatest amount of natural open space in this region is the U.S. Department of Defense. With 50,000 acres of largely undeveloped land spreading into two counties, Quantico Marine Corps Base is a storehouse of natural habitats and wildlife communities.



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W. BROWN

Great Falls of the Potomac

For wintering and migrating waterfowl alone, the waterscape from Great Falls to Quantico must be considered one of this region’s most important bird areas.

bald eagles from endangered status. Here also resides the region’s largest heron colony. More diversity was added recently when the U.S. Bureau of Land Management acquired a sizable horse farm where native meadow habitat is regenerating.

Fort Belvoir offers another example of how wildlife benefit when land, for whatever reason, is held apart from conventional development. Much of its more than 8,000 acres is undeveloped, and fully a quarter of the base is designated for special protection as wildlife refuges or forest and wildlife corridors

linking adjacent habitat areas. Like Quantico, Fort Belvoir’s miles of shoreline, wetlands and contiguous woodlands play a central role in maintaining this region’s plant communities and diversity of birds, fish and other wildlife. The nearby grounds of the Mount Vernon Estate and Gardens, like those of Gunston Hall Plantation on Mason Neck, are maintained for historical purposes, but, in addition to giving visitors insights into earlier times, they contain habitat valuable to wildlife, particularly woodland species.

North along the George Washington Memorial Parkway, the portions of open shoreline maintained by the National Park Service afford excellent views of the broad Potomac and wintering water birds. Other important locations along this path include George Washington’s River Farm, where the American Horticultural Society is painstakingly recreating a native meadow, and Dyke Marsh, notable for its freshwater marshes, tidal flats and plentiful birds.

Follow the parkway beyond Alexandria into Arlington County, and you will come to Theodore Roosevelt Island, another National Park Service property. A real island in the Potomac River, it harbors a rich flora and is a stopover for migrating birds and other wildlife, despite being ringed by urban development, in the flight path of airport traffic, and continually threatened by the spread of exotic plants.

Further north, the mixed woodlands of Potomac Overlook Regional Park and the woods and river bluffs of the National Park Service’s Turkey Run Recreation Area sustain diverse native plant and animal communities. When you visit the Claude Moore Colonial Farm within Turkey Run, you can see early (circa 1771) farming being practiced on a vastly different scale than at the big estates down river.

The dramatic rocky slopes of the Potomac Gorge may be experienced at close hand both from Great Falls Park and River Bend Park where extensive woodlands open, respectively, onto the Great Falls of the Potomac and the island-strewn upper river. Both parks are important stopover spots for migrating songbirds, especially warblers. Further up river, near Leesburg, quiet natural areas are maintained with-

in the Red Rock and Ball's Bluff regional parks. Ball's Bluff, site of an early Civil War battle, is another example of wildlife receiving collateral benefit from historical preservation.

While we have been focusing primarily on the land, the open river and its numerous bays and inlets constitute an immeasurably valuable natural resource, both in their own right and for the major influence they have downstream on the Chesapeake Bay. For wintering and migrating waterfowl alone, the waterscape from Great Falls to Quantico must be considered one of this region's most important bird areas.

Tributaries and "Islands"

Inland from the river, the region's topography is defined by a network of streams which, like the Potomac, were the channels for exploration, settlement, commerce and change. The once wild cascades of the Occoquan River, for example, have long been tamed by dams, but along one side of the current reservoir, running westward for about fifteen miles, is a strip of predominantly undeveloped land administered by the Northern Virginia Regional Park Authority. In contrast to the residential development along the Prince William County side, the north (Fairfax) side was set aside to protect the Occoquan watershed. A series of parks, including Fountainhead, Hemlock Overlook and Bull Run, preserve important stream valley habitat for native wildlife.

While no other tributaries retain such a wide natural margin, parks established north of the Occoquan, along the stream valleys like Pohick, Accotink and Popes Head creeks, and Difficult, Cub and Four Mile runs have attenuated some of the most damaging effects of development while providing elements of native habitat for wildlife.

No matter how large or small or robust our protected natural areas might seem, they are becoming, or already are, islands of nature under constant pressure from surrounding development. Two prime examples are Huntley Meadows, a Fairfax County nature center and park, and Monticello, an Alexandria neighborhood park. Each has retained topographical and vegetative features important to wildlife. Beloved by local naturalists, Huntley Meadows is famous for the unusual diversity of birds and butterflies found within its 1,500 acres of woodlands and non-tidal marshes. Tiny Monticello, at 100th that size, is renowned for the migrating neotropical songbirds drawn to the small, rocky stream it encompasses. Both parks are tightly ringed by commercial or residential development and have remained viable as natural areas only because of public vigilance and advocacy.

Much larger and far more rural, Manassas National Battlefield Park is not yet entirely bounded by modern change. From some perspectives, this landscape appears pretty much the same today as when Union and Confederate troops fought around Bull Run. That it is not the same becomes clear when commuter traffic fills roads around and through the park. Within its 5,000 acres, however, are forests of great diversity and examples of many other regional habitat types, most noticeably expanses of open fields. Although managed primarily to portray the Civil War period, this national park is a crucial element in the maintenance of native wildlife. Species of birds that are in trouble elsewhere — barn owls, wood thrushes, tanagers, several warbler species and specialized grassland species like bobwhites, bobolinks and meadowlarks — can be found here. Public vigilance and advocacy



J. WAGGENER

Above: Clearing for new construction

Below: Manassas National Battlefield Park



ASNV (L. STEPHENS)

Volunteers clearing non-native trees on National Public Lands Day

have protected this park’s cultural resources many times from encroaching development. They’ve also assured this old battlefield an important new role as a haven for flora and fauna that are menaced by the same threats.

Healthy wildlife communities persist in many other local, regional, and state parks and preserves throughout Northern Virginia. In some, like Loudoun’s Banshee Reeks and Prince William’s Conway Robinson State



J.WAGGENER

Forest, they benefit from relatively light public use. Others have survived almost by accident on the fringe of active recreational areas. In other cases, nature centers like Huntley Meadows, Hidden Oaks, Hidden Pond and Long Branch contain natural habitats that are there by design and because people worked hard to preserve and protect them. Meadowlark Botanical Gardens in Vienna and Green Spring Gardens Park in Annandale came about as gifts to the public. Their conventional lawns and gardens have been turned to the work of preserving and propagating native plants and restoring native habitats.

We have concentrated so far on natural areas that enjoy some degree of official protection like public parks and refuges. Various private, non-profit organizations also hold land that can be expected to remain largely protected from conventional development. The Nature Conservancy’s Fraser Preserve in Great Falls and the Bull Run Mountain Conservancy in western Prince William County hold regionally important or unique habitats. At Mount Vernon, Gunston Hall, Woodlawn, Oatlands or on the land around the town of Waterford, wildlife has been nurtured coincidentally on historical properties. Wildlife protection and environmental education are the explicit purposes of the Audubon Naturalist Society’s exemplary sanctuaries in Northern Virginia. The 20-acre Webb Sanctuary in Clifton preserves uncommon wetlands habitat and wildlife. The woods, meadows and wetlands of ANS’s larger Rust Sanctuary outside Leesburg provide a variety of opportunities to see and study local nature.

Other important levels of passive protection can result when properties are subject to conservation easements or are created or preserved in a natural state as mitigation for development elsewhere. Protective easements arranged by organizations such as the Northern Virginia Conservation Trust, Potomac Conservancy and Virginia Outdoors Foundation afford protection to thousands of acres of habitat on private land. Although wetlands mitigation and banking can be problematic, in this region a number of very rich natural areas have been created or preserved through these means. Rather than shopping centers and townhouses, sites like the North Fork Wetlands, Metz Wetlands and Sunrise Valley Wetlands, are home, instead, to flourishing, productive wildlife communities.

Viceroy butterfly atop interpretive sign, Metz Wetlands



J.WAGGENER

Opposite: Map indicates the limited amount of natural open space under permanent public protection



Taking Stock

Touring the formally protected natural areas of Northern Virginia is bound to leave you with a greater appreciation of their diversity, unique beauty and environmental importance. But, a look at any map will show you how few and fragmented, in absolute terms, are lands that have been deliberately set aside for nature. Every new map or overhead photograph shows the further spread of cultural change and greater loss of unprotected natural areas.

The bottom line is that a great proportion of Northern Virginia's natural environment has been altered, and in ways that degrade rather than sustain the complex natural structure and processes we rely on for the quality of our lives and the lives of native wildlife. We are probably well past the point where natural processes can be expected to repair the damage that's been done. **If we are to begin arresting or reversing the course of "business as usual," we either must improve the natural quality of the open space that remains or increase the quantity of natural space permanently protected through public or other means.** The individual decisions, advocacy and community actions needed to make constructive changes can best begin *at home*. §

To Make a Difference at Home

“A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise.”

Aldo Leopold, *A Sand County Almanac*, Oxford Univ. Press, 1949

“People made the environment the way it is today. People can make it different.”

Anonymous

Top: Friend or foe?

Bottom: Volunteers cleaning up a public roadside



J. WAGGENER



J. WAGGENER

When you consider the incalculable number of human actions it took to diminish Northern Virginia’s natural environment, it might seem impossible to ever improve its quality. But, we can make a difference. If each of us — whether we’re a property owner, renter, manager, architect, builder, landscaper, stockholder, parishioner, planner, elected official, or anyone else — considers thoughtfully the effect of our individual, day-to-day actions on the environment, then we really can lessen the harm we do and begin to repair the damage already done.

We can start with what we know about our particular place in the local environment. We can ask questions like: How much water and energy do I consume? Where does the water go when it leaves my faucet or sprinkler? How much of my waste materials get recycled? How fuel efficient is my car? How much of my property is covered with impervious surfaces? Am I sure that insect “pest” I’m trying to eliminate is a foe and not a friend? Do I know what chemicals are being put on my property? What proportion of my lawn or garden is native vegetation? When is the best time to plant, water or fertilize? Where can I get advice on my lawn or garden? Who organizes my community’s roadside and waterside cleanups? What officials can I call on for help with problems? Who are my community’s activists? The answers to these kinds of questions can help you become a better steward of whatever part of the environment is yours to influence.

Lessen the Harm

There are many lists of common sense do’s and don’ts to lessen the negative impact of human activities on air, water, soil and living organisms. Here is ours. If any of these aren’t yet part of your routine, now is a good time to make them so.

CLEANUP, RECYCLE AND REUSE. The self-esteem of entire neighborhoods can be raised just by cleaning up the detritus of daily life. Regular cleanups along roads and waterways also reduce contamination. The recycling of paper, plastic and aluminum is widely practiced, but there’s also vegetable matter like grass clippings that can be recycled as fertilizer and mulch. If building materials, even entire buildings and building sites, can be reused, it limits the footprint of new construction and saves open space.

REDUCE CONSUMPTION. Each of us has control over the amount of energy we consume, whether it’s the number of lights we burn, the miles we drive or the level at which we keep our thermostat. Conservation results when we moderate our use. Indoors, significant reductions are possible with new energy-saving appliances and

lighting options. If you are contemplating renovation or new construction, quite dramatic savings in energy and long-term costs are possible with “green” design and building. Outdoors, keeping lights low will both reduce consumption and improve the quality of the environment for wildlife. Preserving and planting trees is good for wildlife, but the lower ambient temperatures that result can translate, as well, into lower energy use and less cost to you. Reducing the amount of open lawn will have a similar effect, with the added benefit of reducing the time and energy you must spend mowing.

J. HADLOCK



You can also make a difference in water consumption by practicing moderation. Inside, that can be done by taking shorter showers, fixing leaky faucets and pipes, and installing newer, more efficient fixtures, toilets and appliances that offer impressive savings in both water and energy (money, too). Outside, you can reduce water needs by limiting the amount of conventional lawn, letting grass grow higher (by raising the mower an inch or two), watering only in the cool of the morning (to lessen evaporation) and sprinkling on green areas (not driveways and sidewalks), using soaker hoses and/or drip irrigation rather than area sprayers, and choosing native species of plants that need less water. You can hold water on your property with mulch, compost, rain barrels, and more elaborate features such as terraces and water gardens.

PROTECT AIR AND WATER QUALITY. The things we do to conserve energy and water also serve to protect the quality of our air and water. Sources of high energy consumption such as motor vehicles are also major contributors to air and water pollution. We can change that.

We live in one of those areas where having a “red-letter” day can mean we’re breathing really bad air. You can reduce the air’s toxicity by driving a more fuel-efficient vehicle and by driving less. If alternatives — mass transit, carpooling, even biking — are available, use them. If you’re wise or lucky enough to live in a community where you can walk to services, then make the healthful choice and be a pedestrian. It’s also your choice whether or not you run mowers and other polluting equipment when the air quality index moves into warning ranges.

You can control both the quality of water you use on your property and the water you send downstream. It begins with design. Preserving trees and other native vegetation will help retain and purify water. You can minimize the amount of pavement and other impervious surfaces that contaminate and speed the runoff

Once pesticides settle on vegetation and into the soil, their effects are indiscriminate and will be felt wherever carried by your run-off.



K. MUNROE

Top: Less lawn can mean less care and cost

Bottom: Baby Painted Turtle



J. WAGGENER



J. WAGGENER

Top: Autumn leaves

Bottom: Nicky Staunton, Virginia Native Plant Society

of precipitation. Consider roof gardens and rain gardens to slow runoff and retain water. Investigate the full range of new techniques and technologies available under the label of low impact development.

One of the most important things you can do is reduce or eliminate entirely the use of pesticides of all sorts — herbicides, fungicides, rodenticides and insecticides. If you feel you must use them, choose the least toxic product available. Once pesticides settle on vegetation and into the soil, their effects are indiscriminate and will be felt wherever carried by your run-off. Treat commercial fertilizers the same way. Don't use them at all, or use sparingly, and then only after testing your soil for acidity and nutrients to identify the proper proportions of nitrogen or other deficient elements.

Repair the Damage

Cleaning up, recycling, reusing, reducing energy use, conserving and protecting water benefit us and, ultimately, wildlife as well. But, there are many more things we can do that directly contribute to healthier habitats for native plant and animal life.

LEARN ABOUT WILDLIFE. What do you really know about your “wild” neighbors? Do you know one tree or shrub from another, or which plants are natives or exotics? What birds and butterflies can you expect to see, and what attracts them? Can you identify the insects and other organisms that inhabit your lawn, garden or neighborhood? Have you kept a record of what plant and animal life is present through the seasons, and, if the numbers vary from year to year, do you know why? There is much to learn about local wildlife, but you don't have far to look for help. A number of resources are listed at the end of this book. Here are some of them:

📖 **Books and Other References.** Excellent field guides are available covering regional plants and animals. Old standards, such as Newcomb's guide to wildflowers and the Peterson and Golden guides to mammals, birds, butterflies, wildflowers and other aspects of nature have been joined by newer works, like those of Glassberg, Kaufmann and Sibley. The National Audubon Society has a series of books dealing with forest, wetland and other ecosystems and a general field guide to the Mid-Atlantic region. Audubon, the National Wildlife Federation, Sierra Club and Xerces Society have helpful guides to making areas congenial to wildlife. The U.S. Fish and Wildlife Service and National Park Service have produced free, illustrated references on regional native and invasive plants. All of these books and related audio and video references can help you recognize and identify local flora and fauna when you meet them in the field.

🏢 **Agencies and Organizations.** The Natural Resources Conservation Service, Virginia Cooperative Extension Service, and Northern Virginia Soil and Water Conservation District can be your best sources for information and assistance in print and on-line regarding ways you can protect and enhance local natural areas. You can take classes given by the American Horticultural Society, the Audubon Society of Northern Virginia, Audubon Naturalist Society, National Wildlife Federation and the Cornell Laboratory of Ornithology. You can attend programs or go on field trips with these organizations, as well as others like the local chapters of the Virginia Native Plant Society, the Northern Virginia Bird Club, the Raptor

Society, or the Washington Area Butterfly Club, the Potomac Conservancy, and the Northern Virginia Conservation Trust. You could even become a Master Gardener or Master Naturalist.

🍂 **Places.** The larger parks, refuges and other protected areas discussed earlier are the best places to find undisturbed nature, but don't overlook your local nature centers. Places like Huntley Meadows, Hidden Oaks and Potomac Overlook help to put nature in context with their narratives and displays. There is more to learn if a variety of habitats are present, so look for places with elements of woods, fields and wetlands. Each habitat, and each of the transitional zones between habitats, has its own specialized communities. You can combine the pleasure of natural surroundings and the experience of learning by becoming familiar with places like Meadowlark Botanical Gardens, Green Spring Gardens Park, American Horticultural Society's River Farm and the Audubon Naturalist Society's sanctuaries.

🍂 **Activities.** Wherever you choose to go, try to go often. Visit the same places throughout the year, and you'll gain a much deeper understanding of natural relationships and seasonal changes. Keep a journal on the wildlife of your favorite places. Make a record of the presence and extent or abundance of plants, birds and butterflies. Join others on field trips, counts and surveys. These activities are educational, fun and contribute to an important historical record of the health of our natural spaces that can be invaluable in informing the decisions about their future.

MAKE A HOME FOR WILDLIFE. By knowing about the wildlife around you and understanding what local plants and animals need, you'll be better able to restore or enhance quality wildlife habitat. No single site will hold everything that native wildlife need, but here are some basic ingredients that any site may provide:

🍂 **Soil.** In his book on subterranean life, *Tales from the Underground* (Perseus, 2001), ecologist David Wolfe notes that a handful of healthy soil holds "...more creatures than there are humans on the entire planet." Healthy soil is the critical foundation for the intricate and interrelated forms and processes of life that support the natural world we can actually see and appreciate. Present-day building practices result in great disturbance or removal of soil and the fill and sod that replace it may have little in common with what was there. To restore a natural landscape you can limit the use of fertilizers to only what is necessary (using mulch and compost instead), avoid pesticides, dispose of pet wastes and other contaminants and remove non-native, invasive plants like English Ivy and Japanese Honeysuckle.

🍂 **Water.** Sources of water are important for birds and other wildlife in every season. Bird baths and fountains are useful. Larger water features like pools and true wetlands provide habitat for aquatic species, and the areas of transition with adjoining open spaces or woodlands offer even more habitat niches and greater wildlife diversity.

🍂 **Trees.** Viewed by some as obstacles to development or a danger to life and property, and by others as ornaments of a civilized life, trees are a truly essential element of this region's natural environment. Native trees anchor the soil, moderate temperatures, filter pollutants and harbor an astonishing variety of life from microorganisms to eagles. There is probably nothing more important we can do for the health of our natural environment than preserving or planting trees.

Top: Winter leaves

Bottom: Millipede



J. WAGGENER

The healthy soil you nourish, the water you supply and the native trees, shrubs, grasses and flowers you plant will provide needed homes for wildlife made homeless by the suburban way of life.



K. MUNROE



K. MUNROE

❖ **Other Native Plants.** A “native” species is generally thought of as one that was here before the time of European settlement. Since natives evolved here, they often are better able to cope with local climatic and soil conditions, and can be more resistant to plant diseases. They generally require less watering, fertilizing and other special attention than non-natives. Open spaces planted with a variety of sun and shade-tolerant wildflowers and shrubs, of different heights, colors and textures, are aesthetically satisfying to us, but they are the very stuff of life for wildlife, providing food, shelter and breeding habitat for a host of birds, bees, butterflies and other creatures.

❖ **“Homes” for Native Wildlife.** The healthy soil you nourish, the water you supply and the native trees, shrubs, grasses and flowers you plant will provide needed homes for wildlife made homeless by the suburban way of life. If you add nest boxes for birds, houses for bats and bees, gather up brush and fallen limbs for “critter shelters” and let dead trees decompose, you will be amazed at the amount and variety of wildlife you attract.

What’s missing in this list of ingredients? If you guessed lawn, you’re right. Next to preserving trees, the thing that would most change the look and ecological quality of Northern Virginia would be reducing the amount of suburban landscape covered with stereotypical, monocultural, turf grass lawns. As you reduce lawn area, there will be space for more trees, shrubs and flowers. You can sow native plants or allow them to grow naturally assisted by the butterflies and other pollinators that will come. Wildlife of all sorts will benefit; your need for watering should be reduced; and the chore of mowing can become a memory.

MAKE YOUR COMMUNITY AND REGION A HOME FOR WILDLIFE. If you believe that nature needs more of a chance in suburban Northern Virginia, then you should look for ways to make a difference beyond your own home. Think about how these principles of conservation and restoration can be applied to the larger community. Take part in neighborhood cleanups. Find out how decisions are made in your community about such things as mowing, planting, pesticide use, tree preservation, stormwater management, building densities, parks and open space, and traffic issues. Get to know the people who make or influence decisions in your homeowners and citizens associations, and in government, and become an active participant in the process. Join a “Friends” group caring for one of our local refuges, parks, roads, trails or streams, and become active in one of the regional environmental organizations. Be a vocal advocate for effectively preserving the natural spaces we have and for extending protection to more such spaces. Campaign for a healthier environment, and vote for constructive change when you have the opportunity.

These are some of the ways you may lessen and repair the damage done to Northern Virginia’s natural environment. There are many challenges to doing it well, but these are more than balanced by the pleasures of seeing the land healthy and flourishing again.

In the chapters that follow, you’ll find specific examples, advice and resources to help you preserve and create quality wildlife habitat around your home, office, school, church or community. §



N. STAUNTON



J. CHUDZIK

Top to bottom New England Aster; Ken Bass creating shelters for wildlife; Volunteer stream monitors, Mason Neck

Exemplary Cases

“Stream valleys, meadows, lakes, ponds, woodlands, and roadside buffers blend with privately owned natural areas to form a diversified and interdependent ecosystem where wildlife and plants are not circumscribed by property lines.”

The Nature of Reston, Charles A. Veatch with Claudia Thompson-Deahl, Veatch, 1999

The most satisfying thing about being involved with Audubon At Home is the opportunity to meet people who are making this region’s environment more natural. The Audubon Society of Northern Virginia has visited scores of sites, presented a series of programs about what can be done to “naturalize” homes and communities, and held tours and workshops to show examples of how imaginative individuals are putting principles into practice. Here are a few of the cases of constructive change that we discovered are unfolding near you.

In the Neighborhood

A Rural Sanctuary

Their five-acre property lies within the “rural crescent” of Prince William County. When Ken and Fran Bass came here 25 years ago, they were surrounded by agricultural fields and woodlands. Today, the scene is quickly changing to one of conventionally landscaped, suburban-style residences. Not the Bass property, however. Ken is a legendary naturalist and leader of innumerable field trips for Audubon and other groups. He and Fran decided early on to deliberately design and manage their property for birds and other wildlife. Instead of draining wet areas and clearing for the “usual” lawn, they preserved most of the trees, including seven oak species, created six ponds, and cultivated areas of native plants and shrubs that are laid out as islands within a network of curvilinear grassy trails (the only places that ever need mowing). The Basses have used no pesticides for many years and use only organic fertilizer. Grass cuttings are composted along with household scraps. Fallen leaves become mulch, and fallen limbs are piled up for wildlife “houses.” Plants have been selected for their food, shelter and reproductive value to wildlife. Several nest boxes and feeders are evident as you walk the trails.

If assessing how effective Ken and Fran have been in naturalizing their property, you’d probably conclude that “wildly” successful is no overstatement. The diversity of terrain and of preserved and cultivated vegetation account for an astonishing amount of wildlife documented through the years — more than 200 species of

If assessing how effective Ken and Fran Bass have been in naturalizing their property, you’d probably conclude that “wildly” successful is no overstatement.

Grassy trail through native flora



N. STAUNTON



J. WAGGENER



ASNY (L. STEPHENS)

Top: Basses' garden in spring

Bottom: Barbara Farron (left) in her garden-classroom

birds (including 54 nesting), 200 butterflies and moths, over 30 breeding reptiles and amphibians, three species of squirrels and perhaps two dozen other mammal species. The Basses' natural landscaping has resulted in conventional lawn care essentially being reduced to the infrequent mowing of trails and weeding and pruning of flower beds. Their well-established native perennials need little supplementing or other care. The decisions Ken and Fran have made about their property make it an important sanctuary for wildlife and, with the variety and color of their blooming plants, a thing of beauty for the rest of us.

Small Space, Big Results

Barbara Farron and her family have shown that it is not simply scale that matters, but quality. The Springfield home, inside the Beltway, that Barbara and Jim Farron moved into in 1975 had, they said, "maintenance issues" inside and out. Long before water features became popular, they turned the sunken, damp, trash-filled corner of their yard into a natural-bottom pond. That pond was the beginning of the transformation of this small suburban yard into a refuge for wildlife. It also began the nature education of the Farrons' daughters, Suzanne and Laura, allowing them to observe fish and frog cycles, microscopic pond life, birds coming to drink and bathe, and dragonflies attracted to the water.

Barbara and Jim grew up in an era when chemicals were thought to be the answer to all mankind's troubles. Their observation of the negative effects of pesticides in an earlier yard convinced them to go organic many years ago. After Barbara joined the Washington Area Butterfly Club, she began to plant intensively for butterflies. Since then, nearly 50 butterfly species have been positively identified on this quarter-acre lot, and 15 species are known to have bred here. After Jim retired from federal service, he was inspired to make his first project the construction of a garden shed with a "green" roof that presents a vegetated surface rather than an impervious one. With the help of a computer program, books and discussions with green roof experts, he designed and built the shed in four months. Although such roofs are not unusual in Europe, they are still a rarity here, and those done by private individuals are rarer still. Now completed, the family has the pleasure of watching the carefully selected plants thrive and create a living roof.

Barbara Farron believes that what she and her family created on their small suburban lot will inspire others to look beyond the monoculture lawns and flawless roses of storybook fantasies. We think you would agree.

A Neighborhood Garden

Karen and Bob Knopes live in a Fairfax Station community where part of the homeowner association's "common property" is a strip of open, steeply sloped ground on one side of the pipestem that they share with five other families. For 14 years, this space was lawn turf from roadside to wood side, requiring maintenance mowing and grass blowing from spring through fall. Two years ago, the six families agreed to turn the area into a garden. "We turned over the grass and planted as much cover as possible that first fall," Karen says. "The property falls away downhill and would get washed away without something to hold it."

They spread mulch and planted what they had and waited to see what would "take." After two years, plants have spread to cover the ground, and butterfly species are now attracted to the garden. They do not water; little weeding is required. They have learned about "alien invasives" and have phased out the worst of those they planted themselves. Karen says they are not "purists" about native

plantings, because many, like the buddleia and fountain grass, were gifts from neighbors and they enjoy seeing them.

Wildlife has always been present in this well wooded community. Karen says the deer cut their New England asters down to manageable size, rabbits eat the sundrops, moles turn things over and birds feed on wild blackcaps that they let grow at the back of their garden. Raccoons raise young in their trees, foxes play and the red-tailed hawk hunts in their yards. An occasional woodchuck gives the gardeners a hard time. According to Karen, they now have a good number of butterfly species, spring, summer and fall, for everyone to enjoy, and interesting plants provide a changing scene throughout the year. For the winter season, there are several young Virginia pines, three red cedars and an American holly on the hillside. The net result is added beauty in the neighborhood and no watering, no spraying, no mowers, no grass blowers. There is the additional benefit of good neighborhood cooperation and a priceless learning experience.

R. KNOPIES



A variety of attractions for swallowtail butterflies

A “Postage Stamp” Pollinator Garden

When Nadine Lymn moved into her Reston townhouse in 1999, one of the things she was most excited about, she says, “was finally having a bit of earth to call my own.” Though she describes it as “postage-stamp small,” containing only a lone dogwood and some sickly azaleas, she had big plans for her little patch of yard.

Nadine worked with a landscaper specializing in pollinator gardens to replace all the turf and the sad azaleas with nectar-rich plants guaranteed to be attractive to a variety of butterflies, bees and birds. Bright yellow black-eyed susans, buoyant pink coneflowers and dainty pink milkweed soon summoned legions of pollinators to her small property. In early spring, the golden groundsel sprouts in a yellow flourish, offering the first sip of nectar after the winter. Soon after, the purple-hued false indigo blooms, giving early arriving hummingbirds much-needed fuel after their long migration. And in the fall, native purple asters and goldenrod give a final boost before the onset of winter.

When Nadine began the transformation of her yard, she says one of her friends asked why she wanted to “create so much additional work” for herself. “He’s had to eat his words,” she says. “I spend barely any time on my pollinator garden, which, because the plants are adapted to this environment, basically takes care of itself.” She uses no fertilizers and no pesticides and simply spends a few hours here and there over the summer doing some light weeding. When winter comes, she leaves the plants standing, since they help shelter animals from the wind and cold. After the last deep frost in March, she simply snaps off the dead stalks and clears them to make way for the new shoots already peeking out of the soil.

“I spend barely any time on my pollinator garden, which, because the plants are adapted to this environment, basically takes care of itself.”

Nadine Lymn



ASAVY (L. STEPHENS)

Above: Nadine Lynn in her “postage stamp” garden

Below: An excerpt from Katy Simenson’s garden journal

Wildflowers in My Garden

Key:

- ☉ = Spread into masses
 - ↔ = Deer resistant
 - ↕ = Deer love them
 - 1 2 3 4 = Progression of bloom, early to late
 - ☀ = Need more sun
 - 💧 = Need more moisture
1. Spring Beauties 1, ☉ ↔
 2. May Apples 2 or 3, ☉
 3. False Solomon’s Seal 2 or 3, ↕
 4. Ferns: Cinnamon, Lady, Royal, Christmas, Unknown 2 or 3, ☉ ↔

K. SIMENSON

According to Nadine, the flutter of butterfly wings and the humming of bees have not gone unnoticed in her neighborhood. “The kids tell me they don’t like my garden — they *love* it.”

Vienna Natives

When Bill and Katy Simenson returned to their comfortable Vienna neighborhood after many years overseas, Katy was eager to have a yard with wildflowers and native habitat for birds and butterflies. What she had was three-fourths of an acre of moss-covered acidic clay soil and 40 medium-sized oak trees. She decided first to make their yard more private by planting native magnolias and holly. Low-growing mountain laurel was placed so their view of the distant mountains would not be lost. Then, a copse of dogwood and redbud was added as understory for the oaks and as a natural screen. Further planting of fringe trees, serviceberries, wild rose and winterberry — all native — added beauty and food for birds.

Katy planned four large areas for wildflowers under the oaks. Three were mulched each year. As an experiment, the fourth was left *au naturel* to be covered by falling oak leaves. Then, she began collecting and planting wildflowers. Some, like Piedmont azalea, partridge berry, pink lady slipper and several ferns, were rescued from the area being developed as Tysons Corner. Most of her transplanting was done early in the process. While Katy acknowledges some disappointments after 20 years, she can also recount some “lovely” successes.

Slugs and deer have been her garden’s worst enemies, but some wildflowers have done well in spite of them and have spread into masses that look lovely in the spring. Her wildflowers are mainly woodland ones that bloom before the leaves come out on the oaks. She has found that the flowers in the mulched gardens do better than those in the area left alone due to the rich soil the mulch has built up over the years. Bordered by large fallen branches from the oaks, the gardens are nice islands of vegetation where grass and other plants do not thrive.

These gardens are quite maintenance free. Once a year, in the spring, Katy and Bill rake off debris and put on a 1-to-4-inch layer of mulch. This keeps the weeds down and enriches the soil. The Town of Vienna will deliver free mulched leaves to homeowners. One or two weeding per season are all that is required, plus watering in periods of drought. Once the flowers are planted, they take care of themselves. As they spread, there is less room for weeds to come up. Through trial and error, Katy knows the ones that thrive in her yard and those that don’t.

Wild and Attractive

The Beatys have lived in the wooded Franklin Park section of McLean for 18 years. After their first winter they discovered their property contained many native plants, a number of them woodland plants and shade-tolerant understory shrubs and trees. The canopy trees are also natives. Over the years, they’ve added a variety of natives, especially those that are wildlife friendly, but it didn’t start that way. Some of the first plants they purchased were not native, but they were beautiful. As they decline, however, they are replaced by natives.

The Beatys have learned much about the geology of their site over the years. It’s part of the “terrace gravel” forests of Fairfax County, created by the Potomac River during the glacial period. These remnant forests that remain are found along the Fall Line and harbor certain plants associated with the characteristic soils of these sites, which contain cobbles, sand, silt and clay. Their property contains many

Opposite page, top to bottom:

American Toad

Robin Rentsch and friend tending the garden

of these plants, including a canopy of chestnut, white and southern red oaks and pignut hickory. Understory trees of sassafras, red maple and black gum shade the pinxterbloom azalea, deerberry and lowbush blueberry. Under the low shrubs are a variety of mosses, partridgeberry and spotted wintergreen.

The lower portion of their property runs into a tributary of Little Pimmit Run and contains different plants. This rich alluvial soil is home to tulip poplars, spicebush, ferns and other woodland plants. The Beatys spent about three years removing many invasive plants, including English ivy, multiflora rose, honeysuckle and wintercreeper. Removing Japanese stiltgrass is a continuous battle. From the beginning, they chose to use mechanical instead of chemical means of removal. Their choice to pull invasives by hand was made to protect the wildlife in the area.

A great variety of wildlife inhabits the Beaty property. Raccoons are living under the deck, and possum, fox and deer visit frequently along with squirrels, mice, snakes, turtles, frogs, salamanders, insects and many birds. In planting for wildlife, though, Laura Beaty says they've worked to maintain a "landscaped" rather than a "wild" appearance. They've succeeded in creating a most attractive "wild landscape."

An Oak and a Pond

The garden and grounds of Robin Rentsch's property in Great Falls are filled with enviable beauty in every season. A favored stop on garden tours, this property has been featured in national magazines. You sense in listening to Robin that she might consider her family stewards of their property in Great Falls rather than owners. There is a great reverence for the flora and fauna that have been encouraged to thrive here and perhaps a special affection for one old oak and its companion pond. Here is how she describes the situation:

"It was probably sometime in the 1750s that an acorn of a white oak sprouted at the edge of a spring. Because of the spring it never had a dry summer and grew to glorious maturity undisturbed. In 1973, its property was developed, and in 1988, the spring became a pond. Both became the focus of a garden for wildlife.

The oak is the most valuable wildlife food source of the oak-hickory forest habitat, now greatly reduced, in which we live. The oak can take up to 500 gallons of water a day which it then transpires into the atmosphere along with oxygen. The moisture will condense into clouds and return as much needed rain. The oak mitigates run-off which damages the stream, takes up pollutants, oxygenates our air and feeds wildlife. The tannic acid in its leaves turns the water



T. ROBISON

You sense in listening to Robin that she might consider her family stewards of their property in Great Falls rather than owners. There is a great reverence for the flora and fauna that have been encouraged to thrive here...



ASNV (L. STEPHENS)

The Hadlocks consider their yard a habitat in progress. Carol thinks they're a good example of, 'It's never too late to create a healthier habitat for ourselves and wildlife.' They are also a good example for anyone else thinking of naturalizing their property.

Carol and Jay Hadlock in their garden



dark which lessens the growth of algae and provides a beautiful reflective surface. A leafy canopy keeps the water cool but also covers the surface with pollen in the spring — all part of nature's cycle.

The gardens, some sun and some shade, slope down to the pond. They provide a variety of small trees and shrubs which produce berries for birds. There are nectar plants for butterflies and other pollinators as well as host plants for butterfly caterpillars. Behind the pond, in a wooded area, the spring ephemerals grow.

The lawn, with its textured shades of green and varied leaf shapes, I would compare to an oriental rug as opposed to the monoculture of wall-to-wall carpet which could only be maintained by regular applications of chemicals that would damage pond life and ultimately the Chesapeake Bay. And, there are critter shelters such as brush piles and wild areas of tangled vines. No organics leave the property, and two horses provide compost to enrich the soil.

We find new joy and inspiration every day with each change of the gardens, the pond, the oak, the woodland and the wildlife community they harbor."

Never Too Late

Carol and Jay Hadlock's Herndon neighborhood was once a dairy farm with pastures where there are now houses. There were no trees to speak of. Having both grown up or worked on farms in their teen years and wanting to enjoy the taste of homegrown food, they turned the lower portion of their backyard into a vegetable garden, planted apple, peach and cherry trees, blueberry bushes, and later, several strawberry beds. Habitat for wildlife was not a consideration.

In the early '90s, Carol worked in a garden center and many unsaleable plants found a home in their garden, with no thought given to whether they were native or of value to wildlife. But, about this time, they became more interested in bird watching and gradually started thinking about creating habitat for wildlife around their home. They put in their first pond in 1996, and two years later replaced it with a bigger one. They planted flowers for butterflies and gave up on the apple and peach trees because they required so much spraying of pesticides. Now, they cover the cherries and blueberries with nets, leaving a few bushes uncovered for the birds. The apple and peach trees have been turned over to the squirrels. They cover the broccoli plants with Reemay, a thin, lightweight row cover that lets the sun and rain in but keeps cabbage worms out. Diatomaceous earth is used when needed to protect young plants. Pesticides are a last resort. Birds help keep the insect population under control with the added benefit, as Carol says, that "Whether we are planting, weeding or harvesting, we're surrounded by birdsong."

Over the past few years, Carol and Jay have been replacing their earlier non-native species with natives, such as various viburnums, American beautyberry, elderberry and black gum, that produce something for wildlife. Pokeberry, mulberry and wild cherry have been "planted" by birds. Soaker hoses, used in the vegetable garden and attached to rain barrels placed at the corners of the house and garage, provide water to the flower and strawberry beds. The Hadlocks use their grass clippings for mulch in the garden or compost them along with kitchen scraps.

Carol and Jay note that as the trees around the property get taller and create more shade, and as the gardeners get older, the vegetable garden will shrink, and more of it will be turned into native habitat. Even now, however, they see room for more wildlife friendly planting. The Hadlocks consider their yard a habitat in progress. Carol thinks they're a good example of, 'It's never too late to create a

healthier habitat for ourselves and wildlife.’ They are also a good example for anyone else thinking of naturalizing their property. Today, like many of the sites described here, their yard is graced by the sign attesting to its certification by the National Wildlife Federation as “Backyard Wildlife Habitat.”

In the Community

A Community Experiment

Middleridge is in the Burke Center area of Fairfax County. It’s a mature, suburban community of some 550 single-family homes on 1/4-to-1/2-acre lots adjacent to a small lake maintained for stormwater management by the county. Sideburn Branch runs from the lake southeast to join Pohick Creek. There is a margin of public land around the Woodglen Lake that’s in a relatively natural state. The rest of the land is privately owned and landscaped. The Middleridge Civic Association, which looks after community interests, has no common property. Any community-wide efforts, such as cleanups, stream monitoring, wildlife inventories and plantings, rely solely on the support of individual, interested homeowners. Would a rather typical suburban community be interested in something like Audubon At Home? When Sarah Mayhew learned about the program in the winter of 2004, she thought they might.

Sarah got some neighbors together to meet with Audubon members and the Natural Resources Conservation Service and came up with what they called their “natural experiment.” Their list of ideas ran from landscaping and gardening for wildlife, water conservation and related issues, collecting baseline data on water quality, birds and butterflies, and ways they could help the county park authority to improve the natural beauty and value of the adjoining park. It was an ambitious agenda.

With the cooperation of the civic association board, Sarah and her committee set out to reach and educate neighbors through the association’s newsletter. An introduction to Audubon At Home was followed by articles on environmentally-friendly lawn care, controlling pests through integrated pest management, landscaping with native plants, butterfly gardens, groundcover alternatives to English ivy, fall lawn care, an introduction to the National Wildlife Federation’s “Backyard Wildlife Habitat” program, and tree care. They hosted programs by Audubon At Home, the Potomac River Greenways Coalition, the local Wild Bird Center, Virginia Native Plant Society, Master Gardeners, Virginia Cooperative Extension Service and others. Materials from these sources as well as the Northern Virginia Soil and Water Conservation District, the Virginia Department of Conservation and Recreation, and the National Park Service were distributed to residents.

After a year, Sarah says they covered, using programs and/or articles, much of what they intended. The response to newsletter articles has been favorable. They averaged around a dozen people at each meeting and reached several dozen overall. Middleridge sites were included as Audubon At Home Workshops in October 2004.

Two homes served as workshop sites. Rosemary Reardon’s demonstrated how grass can be effectively replaced by environmentally friendly plants to create a lawn that requires little weekly care and provides a refuge for birds, butterflies and beneficial insects. The native understory left intact by the Reardons gives relief from



J. WAGGENER

Sarah Mayhew sets up for a community workshop

Would a rather typical suburban community be interested in something like Audubon At Home? When Sarah Mayhew learned about the program in the winter of 2004, she thought they might.



Left: Carole Rodero and neighbors planning her garden

Right: The team setting to work

the hot summer sun. Flowering shrubs add interest throughout the year. They prune their spirea bushes to obtain a second flowering in the early fall. Dogwoods and holly trees provide berries for birds and other wildlife. Butterflies are attracted to butterfly bushes, black-eyed susans, zinnias, phlox, monarda, coneflowers and salvia. Tucked among the flowers are culinary herbs such as rosemary, basil and sage. Rosemary says the wooden borders they made for the flower beds and their extensive use of mulch keep plantings looking tidy and make mowing much easier.

Carole Rodero, a past president of the civic association, used their workshop to plan, and plant, her own front yard in order to enlarge flowerbeds and reduce the amount of lawn they must mow every week (as well as the need for lawn chemicals). She planted ground covers in various shades and shapes to add texture and to protect soil from water runoff. Other plants were selected to provide flowers throughout the growing season and attract butterflies. Stepping stones, placed strategically, allow you to walk through mulched areas without getting dirty shoes.

Here from their workshop handout is an example of the kind of things learned at Middleridge:

“GARDENING TIP: When spreading mulch, it’s important that it not be more than an inch or two deep around the base of trees or shrubs where it can cause the woody bark to rot. Many landscaping companies place mulch eight to ten inches deep unless you instruct them otherwise. If you want the look of a deep mulch bed around a tree, ask them to make it a “donut” shape with a trough in the middle around the trunk. Just be sure the tree bark is not covered by the mulch. Since termites are a problem in this area, you should not place mulch directly against the foundation of your house, where it could provide a pathway for termites to invade your house. Instead, keep mulch a foot away from foundation wall or, better yet, place a 12-18 inch wide gravel or river stone-lined trench against the foundation of your home to discourage termites. Line the trench with landscape cloth before placing the stones to allow water to penetrate but to discourage weeds from rooting in the stones.”

Sarah acknowledges that only time will determine the results of their experiment. With this kind of start, however, it seems certain the learning and sharing that Sarah, Rosemary, Carole and other residents are involved in will make Middleridge a much better home for nature and an even more attractive community.

“Naturescaping” a Community

Some communities have been designed for nature. A striking case in this region is Reston. More than 7,000 acres, it straddles the Dulles Toll Road in western Fairfax County and is home to well over 100,000 residents and office workers. Planning for Reston began in the early 1960s, with developer Robert Simon’s idea of a community “in” nature rather than “with” nature. To make that a reality would require both preservation of Reston’s special natural places and a long-term commitment to their care. More than 1,300 acres were set aside as common property to be held back from development as parks and open space; 800 of that would be maintained in a natural state.

Today, residents and visitors are the beneficiaries of Mr. Simon’s natural vision. Nearly 60 miles of trails and paths wind through a diverse natural landscape of woodlands, ponds and lakes, along stream valleys and wetlands, across meadows of native vegetation. Reston has four lakes (including a Lake Audubon), three ponds, 20 miles of streams, hundreds of acres of meadows and woodlands, and a popular nature education center. Scores of volunteers are involved in litter control, and the Reston “Weed Warriors” are famous for their continuing campaign against invasive plants.

The Reston Association works hard to make all of its common property as natural as possible, and encourages resident homeowners and businesses to do the same for private holdings. Preserving trees, removing exotic/invasive plants, planting natives, practicing organic gardening and cultivating biological diversity are among the practices Reston Association’s environmental resources manager, Claudia Thompson-Deahl describes when talking about “naturescaping.” “That means,” she says, “conserving and preserving natural resources in the gardening and landscaping process. It means emulating nature rather than forcing a landscaping style that is unnatural.” Through a variety of programs, workshops and informative publications, the Reston Association continues working to preserve and naturalize this community’s public and private spaces. (See the Reston Association’s list of native trees, shrubs and other plants suitable for your own naturescaping in the “Gardening and Landscaping for Nature” chapter.)

A combination of thoughtful design for nature and conscientious stewardship of resources makes Reston a haven for native wildlife and an important example for other communities to emulate. It has also given Reston a special character and a beauty that confirm the wisdom of emulating the natural rather than forcing the unnatural.

“...emulating nature rather than forcing a landscaping style that is unnatural.”

Claudia Thompson-Deahl

Top: Native plants bordering Butler Pond, Reston

Bottom: “Weed Warriors” in action



K. MUNROE



J. WAGGENER



Lisa and Chris Bright

Earth Sangha members engage in forest and stream restoration using nothing but local, native plants...

“You’re planting the forest in the public imagination, and forests must live in the minds of the people if they’re going to continue living on the ground.”

Chris Bright

Stewards of Nature

One of the first questions you are likely to ask after deciding to naturalize your lawn or garden is where to find native plant species. Many commercial nurseries do not carry locally derived species, and those that do generally have only a limited selection. If you go into the wild to gather your own, you’re contributing to the pressure on already diminished native plant communities. Fortunately, in Northern Virginia, this need is being met increasingly by a non-profit organization called Earth Sangha (pronounced “Song-ah”). According to Chris and Lisa Bright, principals in Earth Sangha, the latter name is a Buddhist term connoting community, and expresses the group’s desire to encourage better stewardship of the natural environment.

Earth Sangha members engage in forest and stream restoration using nothing but local, native plants. Their approach is to produce, exclusively from wild populations, the seedlings of canopy trees, understory and herbaceous (non-woody) plants. At their plant nursery in Franconia Park in Springfield, Lisa Bright explains that all of the stock is locally derived, all are grown in native soils, and herbicides or pesticides are never used. Screening protects beds and potted plants from deer. The 60-plus species they propagate here are used in a variety of restoration projects.

One such project has been the restoration of the badly degraded area at the headwaters of Backlick Run which flows through Wilburdale Park. Through an agreement with the Fairfax County Park Authority, Earth Sangha volunteers have done plant surveys here, removed invasives and planted natives, all aimed at encouraging the surrounding community to become more actively involved in caring for the park and stream.

Earth Sangha’s major project of transforming a 20-acre tract on Pimmit Run into a “native arboretum” goes beyond simply trees to encompass woodland species from canopy to forest floor. The Marie Butler Preserve in McLean is intended to be a unique educational resource where people can learn to identify species of trees, shrubs, vines and other woodland plants, and begin to appreciate the interactions and relationships that lead to healthy plant and animal communities. Chris Bright believes anyone visiting this preserve will gain new information or perspective. In sharing this with others, he says, “You’re planting the forest in the public imagination, and forests must live in the minds of the people if they’re going to continue living on the ground.”

Earth Sangha makes its plants available without charge to any interested individual, business or other organization. So far, recipients include the Virginia Native Plant Society; National Wildlife Federation habitat programs for backyards, schools and communities; the Northern Virginia Conservation Trust; and various other organizations and agencies.

Schools of Thought

“My Roommates are a Bunch of Worms.” If you’re in elementary school, that’s probably an irresistible name for a project on composting, and apparently it was. The school-wide activity was so successful at Fairfax City’s **DANIELS RUN ELEMENTARY SCHOOL** that it led science teacher Lori Huberman Hayes and environmental activist Jeanette Stewart to undertake a more ambitious program to improve the health of their watershed. Adapting the principles of “bayscaping”

(landscaping to protect the Chesapeake Bay) to support the Virginia Standards of Learning, they came up with a series of projects that advance education while improving a seriously degraded stream.

Projects have ranged from recycling paper, to using cafeteria scraps to grow the red wigglers in the students' compost piles; to using that compost on crops they grow in their garden plots; to removing invasive plants from the school grounds; to bayscaping the grounds with water gardens and a native garden to attract butterflies and other pollinators; to replacing a hillside's exotic vegetation with native grass; and starting to stabilize and restore 400 feet of stream bank along adjacent Daniels Run. Only native plants like persimmon and dogwood qualify for these projects. Students also designed a storm drain marker to go on every storm drain in the City of Fairfax. More than 800 students have participated in this program which is now an integral part of the school's curriculum.

Each class takes on discrete projects such as a rain garden or making homes for wildlife. Help for these projects comes from, the Northern Virginia Soil and Water Conservation District, the city, other agencies and the non-profits EcoStewards Alliance and Lands and Waters. The program enjoys strong support from teachers, the school administration and parents. Lori feels gratified at the enthusiasm shown by the students and says she is constantly surprised at how much they gain in this learning-by-doing environment. She is working to develop a package on the Daniels Run experience that can be used by other schools.

CHESTERBROOK ELEMENTARY on Kirby Road in Mclean is a long-established school of conventional design and landscaping. On the inside, however, the school is being slowly transformed as enclosed courtyards are converted to natural spaces. Following the example of nearby Tuckahoe Elementary School, with encouragement and financial support from Chesterbrook's PTA, Master Gardener Jean Wolf designed and developed the "Five Senses Garden." It's in a small, enclosed space with a rock pond, waterfall, native wetland plants, frogs and turtles, and bird boxes that can be viewed from all sides by students. Other "discovery gardens" in progress are a Literary, Artist's, Poet's and possibly a rock garden (on a deeply shaded, exterior side of the building). Additional features are possible around the sport fields. Like Daniels Run, Chesterbrook's faculty works to integrate the design and use of these gardens with standards of learning. In talking with teacher Jennifer Ellis and Sandra Maynard, the PTA's science chair, it's clear that these



J-STEWART

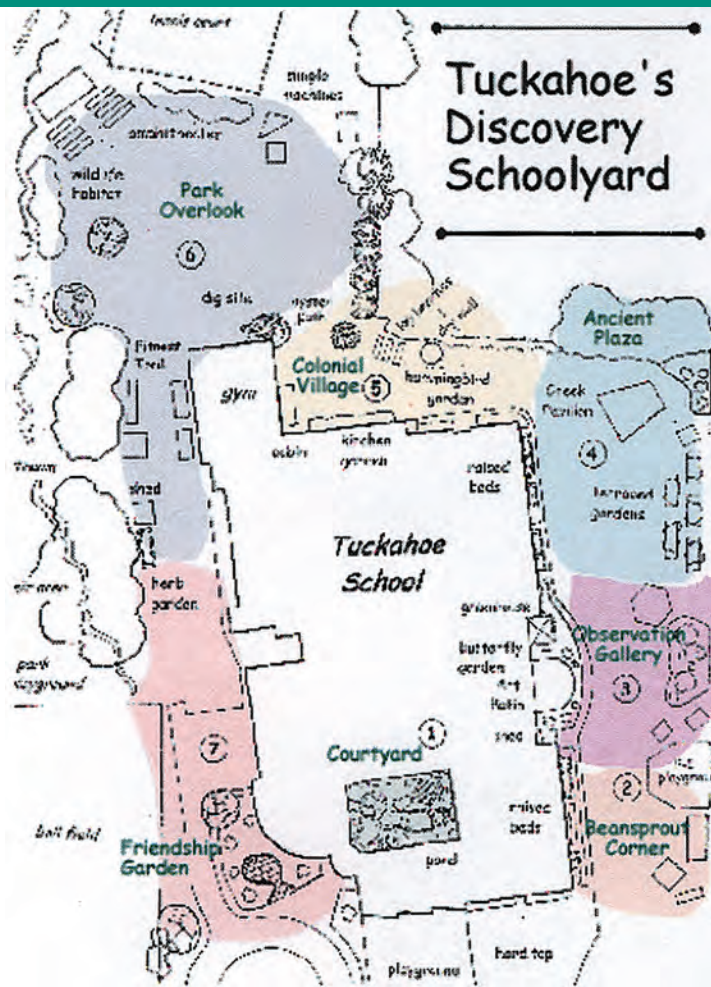


J-STEWART

Top to bottom:
Daniels Run students "bayscaping" their schoolyard
Students-designed interpretive sign, Daniels Run Elementary School
A teaching opportunity, Chesterbrook Elementary School



J.WAGGENER



ARLINGTON COUNTY SCHOOLS

additional natural dimensions are popular with both school administrators and parents. Visitors can see the curiosity and enthusiasm of students.

The source of inspiration for Chesterbrook was **TUCKAHOE ELEMENTARY SCHOOL**. In this Arlington school, environmental education is part of the curriculum at every grade level. Principal Cynthia Brown says Tuckahoe's motto is "Learning to Live, Living to Learn," and their goal is a living curriculum that captivates, engages and stimulates their students. That they've succeeded is evident from the breadth and depth of natural elements present in and around the school; evident, as well, from the way Tuckahoe is being used as a model by other schools near and far.

There's a reference in Tuckahoe's handbook to the more than 15,000 hours, from kindergarten through the 12th grade, that students typically spend in school, only about 1 percent of which is spent outdoors. Until the mid-1990s, that was the case here as well. The evolution of something different began with a butterfly garden and the PTA's interest in making the schoolyard a place for teaching. Since that time, a total of seven outdoor classrooms have been created. A flower garden welcomes

visitors at the entrance of the school. A courtyard pond inside the entrance recreates Virginia's ecological regions and the Chesapeake Bay watershed. The Beansprout Corner for kindergarteners focuses on habitats, birds, trees and flowers. A patio, surrounded by beds of milkweed, butterfly weed and other species, is used for art and studies of pollinators and birds. Vegetables are grown and stories are told in the Beatrix Potter Garden. Period farming and crafts are practiced in a colonial village. Latest is an overlook on the edge of bordering Tuckahoe Park that was planted in Virginia natives with the help of Arlington Parks and Arlington Releaf and certified as schoolyard habitat by the National Wildlife Federation. It is one of the stops on the Tuckahoe-designed nature trail that meanders through the park.

Students use and maintain each of these classrooms. Older students are teamed as mentors with younger ones. Art, science, literature, writing, and many other traditional "indoor" activities benefit from these outdoor classrooms, but the threading of environmental education through every grade level and subject sets Tuckahoe apart — that, according to former Outdoor Learning Coordinator Beth Reese, and the extraordinary vision and energy of the school's faculty, families and community. They're the ones, she says, who are responsible for the bake sales, yard sales, plant sales, sales of commemorative bricks, garden tours, raffles, giving and grants that have brought each of these features to reality. The result of their good works is an exceptionally fine case study of how to build a living curriculum.

Above: Schoolyard plan, Tuckahoe Elementary School

Below: Connections with nature begin in the "Beansprout's Corner"



J. WAGGENER

Larger schools, like most middle and high schools in Northern Virginia, are difficult to reconfigure for nature if they have been designed and constructed along conventional lines. Extensive parking areas and other impervious surfaces, playing fields and other outdoor facilities, such as the ubiquitous trailers added to handle student overload, generally usurp open space that might have been naturalized. Even where the environment is a priority, the nature of conventional development presents great challenges to those seeking to develop nature.

FLINT HILL SCHOOL, founded in 1956, is a private institution in Oakton, serving junior kindergarten through grade 12. It lies on Rocky Branch in the Difficult Run watershed and borders on Oak Marr Park and Golf Course which separates its two campuses. Altogether, Flint Hill covers about 50 acres with the usual buildings and recreation fields as well as a hard engineered stormwater management pond. It is edged by the park's predominantly oak-hickory woods where red-tailed hawks have nested. Although much reduced in extent in recent years, the remaining forest border still attracts wood thrushes in season. A trail runs through the park. The Virginia Bluebird Society maintains a bluebird nest box "trail" on site.

The school has a strong earth science curriculum, and its faculty and students have undertaken a number of projects to soften the hard edges of unnatural features. They've removed invasive plants and planted natives. School staff created a small, productive pond just downstream from the stormwater pond. When they originally sought permission to make the stormwater pond itself more natural, they found that county regulations made that difficult. Nor was it permitted to plant native trees in other parts of the property (selections were limited to a handful of not necessarily native species). With the cooperation of the county, these regulations are being modified to permit more latitude for site diversification, creation of a graduated, natural edge and naturalization of the stormwater facility. Flexibility of this kind is essential if schools like Flint Hill are to turn outdoor spaces into quality classrooms.

FREEDOM HIGH SCHOOL in Woodbridge, one of Prince William County's specialty high schools, opened recently as a center for environmental sciences. It lies on about 80 acres near the Woodbridge Campus of the Northern Virginia Community College. Although more than three-fourths of the site was thoroughly disturbed by construction (there are 23 acres of impervious surfaces), about 14 acres remain in a relatively undisturbed state. Part of the latter is the remnant of mature hardwood forest that borders the site on three sides. The developed area slopes southward to a stormwater management pond which has value as an educational feature. Also outside are a solar-powered greenhouse and a small area, surrounded by faculty parking, where native plants are cultivated. Inside are two well-designed and equipped environmental science labs and an aquarium.

The school's four-year program is expected to integrate environmental science with other disciplines. Each student must devote a required number of hours to projects, and some will engage in special research. Despite the reduced natural character of the site resulting from an industrial-type design and conventional development, the wildlife habitat that remains can likely be preserved. Working with local environmental groups and the



FATWOOD

Above: Flint Hill students digging in

Below: Volunteer Sally Underwood and students "naturalizing" the entrance to Freedom High School

Even where the environment is a priority, the nature of conventional development presents great challenges to those seeking to develop nature.



J.WAGGENER

Significant gains in education and substantial reductions in costs will be possible when school design and construction begin to reflect the value of having natural spaces close at hand.

River Bend Middle School's "clean slate"



J. WAGGENER

neighboring community college, there is also significant scope for habitat enhancement on site and in the surrounding community.

Both of the fine schools above, and most of the others in this region, demonstrate how difficult it can be to have natural surroundings and functioning wildlife communities if routine building practices dictate that sites be cleared of their soils and cover, and codes and regulations impede restoration efforts. Obviously, nature suffers in this situation, but students and the public suffer, too. If practical outdoor classrooms are not available on site, the alternatives are more time spent with abstract science studies indoors, or field trips to suitable natural places. Since not every school is next to a park like Tuckahoe and Flint Hill, this means bussing students off site and dealing with all of the cost, scheduling and other logistical issues that entails. Freedom High School is fortunate to be relatively close to exceptional natural areas, but not within walking distance. Significant gains in education and substantial reductions in costs will be possible when school design and construction begin to reflect the value of having natural spaces close at hand.

"A clean slate" might well describe **RIVER BEND MIDDLE SCHOOL** in Loudoun County. This is a very modern facility in a new, affluent residential community. It occupies about 50 acres next to Potomac Falls High School and Algonquian Park, a Northern Virginia Regional Park Authority property. The school grounds back up to undeveloped wetlands bordering the Potomac River. On the west side, a wooden fence separates school property from a few acres of privately owned, old field habitat which is slated to remain undeveloped.

The wooded buffer between school and wetlands is heavily impacted by invasive plants such as Japanese stiltgrass. On the school site itself, there is virtually nothing in the way of native flora and fauna. Except for the stormwater pond adjacent to the athletic fields, the grounds are almost entirely carpeted with smooth mown turf grass. Tammy Field, earth science teacher, and Miriam Cross, librarian, concluded that if River Bend had more natural character it would not only improve its appearance, but more importantly, its educational value. With the support of Principal Benjamin Lacy, Tammy and Miriam contacted the Audubon Society of Northern Virginia to see what they could do.

They're finding that they can do a lot. There are opportunities to create quality habitat on the school grounds and ways to enhance and connect adjacent properties. With materials from Audubon, the National Wildlife Federation and governmental agencies as resources, they are investigating a number of ideas for naturalizing sterile school grounds. An important decision was made to involve students and parents at the very outset, so there will be a common sense of authorship and ownership for what materializes. Student committees were formed to define specific projects, and a joint faculty-student-parent review helps determine what will be done and when. Projects under consideration include removal of invasives, bird feeders and nest boxes, cultivating for pollinators, a woodland nature gar-

den, comparative plots of natural and manicured vegetation, heritage vegetable gardens, monitoring routines for birds and butterflies, an interpretive trail and more.

Because of the prevailing design and construction imperatives noted earlier, River Bend has been left with little natural habitat on-site, so it is not, today, a congenial place for native wildlife. If the good ideas and intentions bubbling up from the students are any guide, however, that is about to change. River Bend Middle School, it seems, is about to bloom.

Centers for Nature

Teachers are accustomed to fewer and fewer students having much direct experience with nature. This makes it even more important that there be places where “hands-on” learning about natural processes can occur. Since schools are so constrained in providing quality open space, we’re fortunate that our region has several natural areas with educational facilities to serve both students and the general public.

HIDDEN OAKS, located in Annandale District Park, is a typical smaller nature center. The park is old agricultural land that is succeeding to mixed hardwood forest. Though ball fields, tennis courts, a tot lot and picnic area are only a short walk away, the center itself is kept as a quiet place for experiencing and learning about the natural world.

Hidden Oaks’ staff offers programs for students, adults, seniors and special groups. Inside the center, exhibits help visitors understand the natural history of the area inside the Beltway and the effects of cultural change. Visitors are led to explore each level of a native forest from its canopy to below its surface. They’ll find visual signs and hear the sounds of woodland wildlife. Indigenous snakes, turtles and amphibians can be observed in and around the indoor pond. Children can read postcards sent from migrating birds to their friends overwintering back here. The youngest can dress up as ladybugs, butterflies or a raccoon and play and learn in the children’s corner.

Everyone can view local nature “live” at the outdoor feeding station. Hidden Oaks’ newest feature is a 15-by-20-foot outdoor pond, the focal point of a National Wildlife Federation-certified Backyard Wildlife Habitat. The pond was started by the president of the Friends of Hidden Oaks, Scott Birdwell. Donations to a memorial fund for long-time volunteer Katie Rheuark were used to naturalize the area around the pond, add a trickling waterfall and a bench. Staff donated native saplings, and the Virginia Native Plant Society contributed ferns and wildflowers. Bird feeders from Katie’s own backyard completed the habitat. The pond and habitat make a lovely tribute to Katie, but also to the Friends group and everyone else involved. It’s now part of the story Hidden Oaks’ staff members have to tell — about people making a place for nature and being good neighbors to wildlife.



FAIRFAX COUNTY PARK AUTHORITY PHOTO

Hidden Oaks' new natural feature interests young visitor

Huntley Meadows' story is not nearly complete without noting the role individuals and groups have played in its preservation and protection. It exists because dedicated people, like Norma Hoffman, Al Aitken and Jean Packard, fought for its establishment.

Volunteers remove invasive plants, Meadowood Special Recreation Management Area



J. WAGGENER

Larger nature centers such as Huntley Meadows and Potomac Overlook have similar stories to tell and lessons to teach. Exhibits document the natural and cultural history of the land, and interpretive trails wind through preserved areas of great biological diversity.

POTOMAC OVERLOOK, a 70-acre wooded tract in Arlington County, was acquired by the Northern Virginia Regional Park Authority (NVRPA) in the late 1960s. The conceptual plan for the park, which a team from the National Audubon Society worked on in 1971, envisioned an urban nature sanctuary. NVRPA staff and supporters have made it that and more. Programs that draw the public to the park give them an appreciation of local nature. Materials like the exceptionally well-researched and illustrated field guide to the park help visitors understand how Potomac Overlook came to be and how they can help preserve and enhance it and other areas.

HUNTLEY MEADOWS PARK AND NATURE CENTER conveys a similar message, but at 1,500 acres, it is a considerably larger park with a very different complex of habitats. Marshes and meadows are featured here, both of which — particularly the meadows — are in short supply in the developed areas of Northern Virginia. A special diversity of habitats makes it a “hot spot” for birders. The Fairfax County Park Authority’s well-designed and extensive network of boardwalks and trails makes nature readily accessible. Few places in this region are as suitable for studying birds, butterflies, dragonflies and other wildlife.

Huntley Meadows’ story is not nearly complete without noting the role individuals and groups have played in its preservation and protection. It exists because dedicated people, like Norma Hoffman, Al Aitken and Jean Packard, fought for its establishment. They and others have mounted successive campaigns over the years to maintain the integrity of the park’s borders and the quality of the resources within. The Friends of Huntley Meadows is a model for other such groups, and an initiative by its president, Harry Glasgow, has led to the formation of a confederation of friends groups to advocate effective public and private support for county parks.

In areas without local nature centers, state or federal facilities may offer similar informational, educational opportunities. **MEADOWOOD SPECIAL RECREATIONAL MANAGEMENT AREA** on Mason Neck is a good example. When the U.S. Bureau of Land Management (BLM) acquired Meadowood Farm as an eastern outlet for wild horse and burro adoptions, it got considerably more than pasture land. The 800-acre property contains mature hardwood forests, marshes, old fields and edges that make it an important natural resource and an ideal place for environmental education. School groups from Fairfax County and other jurisdictions are welcome here. Audubon volunteers have been conducting surveys of birds and other wildlife here for several years, and their data have helped inform BLM’s decisions about wildlife management.

Like other special natural areas, Meadowood might have become just another residential or commercial development had it not been for people who recognized its greater value as a natural resource. Audubon member Charlie Creighton came up with the idea of a land exchange that could place this property under public protection. A simple idea, but it took a lot of work by a lot

of people and agencies to conclude the complicated arrangements that resulted in BLM finally acquiring the property. The public is the real beneficiary. As Charlie has said, “If you think a piece of undeveloped real estate is valuable today, just consider how much more valuable it’ll be as natural open space 50 years from now.”

Prince William County has no established nature centers, but state and federal facilities exist within the county where students and the public can connect with the natural environment. Foremost among these is the **OCCOQUAN BAY NATIONAL WILDLIFE REFUGE**. This refuge has exceptional habitat diversity and is one of the region’s most important areas for birds and other wildlife. Although relatively small at 643 acres, there are miles of trails through the refuge and the U.S. Fish and Wildlife Service permits school groups to use portions as outdoor classrooms.

This property would have become a conventional mixed-use development with a marina and golf course had not public action forced a different outcome. Audubon member Jim Waggener was doing surveys of birds on and around the army post in Woodbridge when it was marked for closure by the government. As various interests vied for pieces of the valuable waterfront real estate, Jim recruited a coalition of people and organizations to make the public and elected officials aware of the site’s unique natural value. Five years of hard effort by advocates and bi-partisan cooperation in the U.S. Congress led to the opening of the refuge in 1998. Since then, the very energetic Friends of the Potomac River Refuges has worked to make the site better known to the general public and to interpret its special natural history. With development and population burgeoning just steps away from its border, continued vigilance will be needed to keep this well-loved refuge from being loved to death.

Model Landscapes

We’ve pointed out a number of properties in this book that are good examples of how to use native plants to landscape for native wildlife. Not all of these are open to the public. The following three sites are places that you can visit, and revisit as many times as you like, to learn about naturalizing your own space.

River Farm

George Washington’s River Farm, headquarters of the American Horticultural Society (AHS), is on East Boulevard Drive off the George Washington Parkway south of Alexandria. It’s a diverse 25-acre estate with landscaped lawns and gardens (including a delightful children’s garden), woods and Potomac waterfront as well as a handsome house and outbuildings used by AHS staff.

Although our first president never lived here, he did operate it as a working farm, planting corn and grain crops. It remained in the Washington family until 1850. AHS purchased the property in 1973. Thousands of visitors come to River Farm every year to attend various seminars, workshops and other programs and events related to gardening.

Some years ago, AHS discontinued the use of insecticides and fungicides, and herbicides are only used at River Farm to control invasive plants. More recently, it undertook to restore five acres of lawn as a native meadow. To create a high-quality meadow, AHS is carrying out a phased, careful process of removing invasives and planting natives. Restoration is being done by hand, without tilling, in



J. WAGGENER



J. WAGGENER

Top to bottom:

Front gate of military base that became a wildlife refuge

Preparing for an invasive plant removal project

River Farm meadow in late summer



J. WAGGENER



J. WAGGENER



ASNY (L. STEPHENS)

Top to bottom:

Painted Lady on asters, River Farm

Pondering native plant purchases,
Green Springs GardensButterfly class field trip, Meadowlark
Gardens

J. WAGGENER

order to avoid erosion. Eventually, the new meadow will spread from the gardens down to the riverside. After only two years, the differences in bird and pollinator activity are quite pronounced — a meadow filled with butterflies and literally humming with bees.

River Farm's horticulturist, Peggy Bowers, sees the emerging meadow as an advertisement for AHS's "SMART GARDEN"® tenets, which emphasize working with nature whenever possible and gardening with an awareness of environmental impacts. In raising the standard for gardening practices, the American Horticultural Society is adding biological health and diversity as well as beauty to the landscape of Northern Virginia.

Green Spring

You might not expect to find a lovely, historic manor house and tranquil grounds devoted to gardening and nature near the busy intersection of Little River Turnpike and Braddock Road in Annandale. But, that is where you'll find Green Spring Gardens Park, a Fairfax County Park Authority property that is operated as a regional horticultural resource. When the Straight Family deeded Green Spring to the county in 1970 it included formal gardens. Today's 28-acre park retains some of that formality, but it also offers forested paths, a stream and two ponds, and several demonstration gardens, including two acres for the cultivation of Virginia native plants, a horticultural center with greenhouse, meeting rooms and a comprehensive, gardening-related library.

The Park Authority coordinates a Master Gardener Program that focuses on "eco-savvy gardening" principles aimed at naturalizing conventional landscapes. Green Spring's director, Chris Strand, says their current practices involve almost no herbicides or pesticides, and fertilizing is done with compost and leaf mulch. The Virginia Native Plant Society's Potowmack Chapter has a long history of working with the park, and the so-called "Frogs" (Friends of Green Spring) provide excellent support for all park programs.

Green Spring plant sales are one of the best places to find native species and sound advice on how to grow them. In addition to the thousands of people who come to Green Spring every year to relax or patronize the farmers' markets, a great number attend meetings and classes where the message of responsible, organic gardening is delivered at first hand.

Meadowlark Gardens

Meadowlark Botanical Gardens in Vienna is another private estate that became a public park because of the concern and generosity of donors. As development pressed closer to their once secluded property, economist Gardner Means and his wife, social historian Caroline Ware, made the decision, in 1980, to convey their 74-acre farm to the Northern Virginia Regional Park Authority so that a piece of Virginia countryside would be preserved. The NVRPA purchased a neighboring tract of land to create today's 95-acre park.

Initially, like Green Spring, Meadowlark's grounds were formally landscaped with sweeping expanses of lawn and ornamental lakes. This has changed over time to accommodate a butterfly garden, native wetland, wild meadow and the Potomac Valley collection of native plants. The addition of these natural features makes Meadowlark an even more appealing place for birds and other wildlife. The native

meadow, for example, brings in many butterfly species not seen in the traditional gardens.

According to Garden Manager Keith Tomlinson, the NVRPA is committed to making Meadowlark Gardens a show-place for natural gardening practices, a place of work and study for volunteers, students and organizations interested in creating or enhancing habitat for native wildlife. Field trips and classes by the Audubon Society of Northern Virginia and other organizations at Meadowlark Gardens offer the public many opportunities to study birds, butterflies, dragonflies, and other wildlife and the plants and other habitat elements that attract them.



K. MUNROE

History and Nature

The pace and reach of development in Northern Virginia are such that any preserved property with a significant amount of undisturbed landscape is bound to assume prominence as a haven for wildlife. We are fortunate that many areas set aside for historical reasons also play an important role in protecting this region's natural history. There are several examples, but the following serve to illustrate why, in at least some respects, history can be on the side of nature.

Waterford

Historic Waterford lies just a few miles northwest of Leesburg in the fastest growing county in the nation. Loudoun's frenetic development can seem very distant, however, as you walk the village's peaceful shaded lanes, admiring period buildings and listening to the singing birds. Waterford, established originally as a Quaker community in the 1730s and formally incorporated in 1802, grew into a prosperous farming and milling center. Although threatened in the past by industrialization, civil war and depression, the village and surrounding fields that you see today pretty much conform to early plans. With its mill and many other buildings dating from the early 19th Century, Waterford projects an authentic image of a 200 year old farming community. The village is in an idyllic setting on Catocin Creek and surrounded by open fields. It has long been targeted for residential development.

Waterford is not a museum, but a real village whose residents care very much about its history, its special beauty and character. They worked to have Waterford designated a National Historic Landmark (1,400 acres in 1970). Nowadays, within the village, some seventy easements protect historic properties from untoward change. The Waterford Foundation purchased 51 acres in 1998 to protect open space to the north of the village, and recently raised funds to purchase the 120 acre Phillips Farm, an adjacent property which contains the high ground so crucial to preserving Waterford's historic view. The efforts of the people of Waterford to protect their cultural history also preserved old fields, wetlands, woods and edges of great value to native wildlife.

Gunston Hall

Less exposed to change than Waterford is Gunston Hall Plantation on Mason Neck. This was the home of George Mason, author of the Virginia Declaration of Rights (model for the U.S. Bill of Rights) and a framer of the Constitution of the United States. Gunston Hall is a National Historic Landmark owned by the Commonwealth of Virginia and administered by a Board of Regents of the



J. WAGGENER

Top: Eastern Tiger Swallowtail

Bottom: Sign marking Waterford's historic district

Colonial Dames. It's another good example of how a protected, relatively undisturbed cultural site has become important to wildlife as surrounding areas have been developed. Originally a 5,000 acre plantation for tobacco and grain, it is now 550 acres of woods with centuries-old trees, fields, formal gardens, an historic house built in 1755 on a bluff overlooking the Potomac, reconstructed dependencies, a modern visitors center and museum. A nature trail winds through mixed habitats to the river. Other trails connect this property with neighboring Pohick Regional Park. The plantation's open fields are attractive habitat for grassland birds, and David Reese, Gunston Hall's director, thinks they could be important in the recovery of regionally declining species such as quail.

Mount Vernon

Northern Virginia's, and America's, best known historic property is Mount Vernon Estate and Gardens, destination for throngs of tourists seeking insights into the life and times of the Father of our Country. What they find is a 490-acre estate, the famous mansion itself with its prospect on the broad Potomac, outlying period buildings, and an expanse of formal lawn and gardens maintained in the fashion of the 18th Century, all through the careful stewardship of the Mount Vernon Ladies Association.

Several trees dating from Washington's period survive on the property. Altogether, the estate contains about 300 acres of woodlands comprising oak, hickory, ash, poplar and other native species. This is very good for woodland wildlife, but the long-term health of this habitat is not assured. Similar to other forest tracts in this area, little natural regeneration occurs due to a lack of seedlings, even when natural clearing takes place. Because natural forest fires are no longer commonplace, foraging deer have denuded the forest floor. The result, according to Mount Vernon's horticulturist, Dean Norton,



COURTESY OF MOUNT VERNON LADIES ASSOCIATION

George Washington's Mount Vernon Estate and Gardens

is a forest that is primarily mature, lacking the many stages of understory that give diversity to woodlands and support healthy regeneration.

Using some seminal work at Gettysburg as his model, Norton has begun to remedy this situation. Small, 100-by-100-foot areas of woods are cordoned off, trees are "topped" to let all-important sunlight penetrate to the surface, and selected seeding and planting are done. The areas are fenced to a height of 10 feet to exclude deer. Fallen and cut wood is stacked into "animal houses." The entire effort is being described and monitored to chart progress and lessons learned. A creative combination of preserving special historic trees and encouraging healthy regeneration of the overall woodlands adds an important natural dimension to Mount Vernon's traditional role as a national landmark. §

Gardening and Landscaping for Nature

“For the foreseeable future ... there is no escaping the need to manage nature. The best we can do is to observe the following rule: So manage nature as to minimize the need to manage nature.”

The Ecology of Eden, Evan Eisenberg, Knopf, 1998

If you’ve made the decision to have a more natural garden or landscape but aren’t quite sure how to begin, it makes sense to get advice from someone like Carol Hadlock who has lots of experience in the trials and errors of creating natural habitat. Here’s what she says about designing and maintaining such spaces.

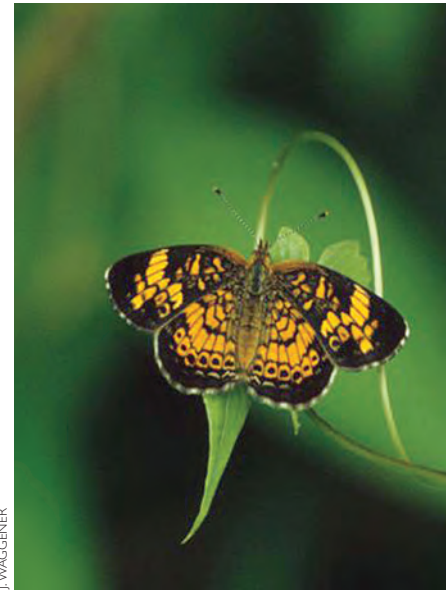
Making a Plan

Whether you are ready for a complete makeover of your property or prefer to take gradual steps toward a more natural landscape, you will need a well thought out plan. Before doing anything, look around your property and ask these important questions:

1. How much lawn do you have, and how much do you need? The less conventional lawn, the more area that can be natural.
2. What do you know about your property?
 - b. Where is it sunny or shady?
 - c. Where is it wet or dry?
 - c. What kind of soil do you have?
3. What do you already have that is inviting to wildlife? Do an inventory of existing plants and other features attractive to wildlife.
4. What creatures would you like to attract to your property? Butterflies and goldfinches need open, sunny spaces; bluebirds, open spaces and berry bushes; frogs and dragonflies, ponds.

The next step is to sketch your property as it would appear from above. This will be your base map. It should include impervious surfaces (buildings, driveway, sidewalks), existing trees and shrubs, planted areas (flower and/or vegetable gardens), water sources (streams or ponds), areas of invasive vegetation, brush piles, rock piles, and existing bird boxes and feeders. Note the direction of the sun. If the ground isn’t level, show where it slopes. Make a number of copies of this map and use them to experiment with different garden layouts. You can save a lot of time, money and labor by making your mistakes on paper.

Another important consideration — check the views from inside your home or office. One of the great joys of landscaping for nature is being able to observe closely the lives of the creatures who will share your space. In deciding where to put your new trees, shrubs and flower beds, make sure that you will have a good view



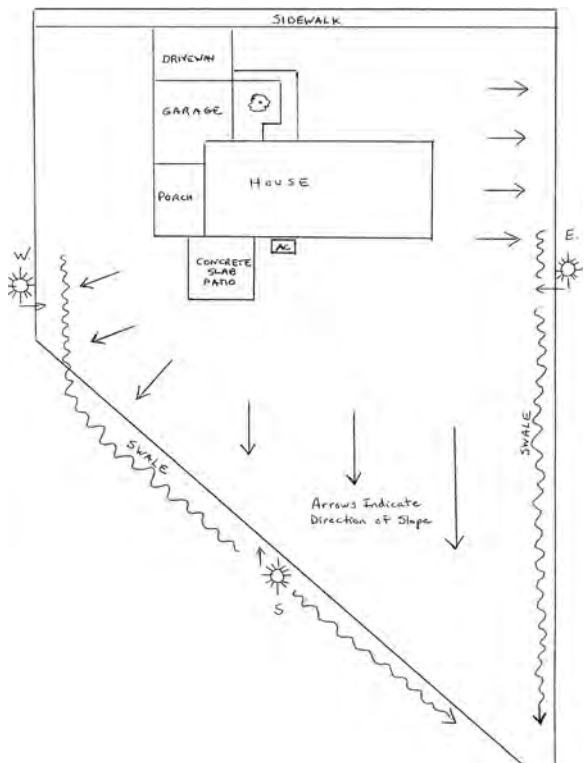
J. WAGGENER



K. MUNROE

Top: Pearl Crescent

Bottom: Green Frog

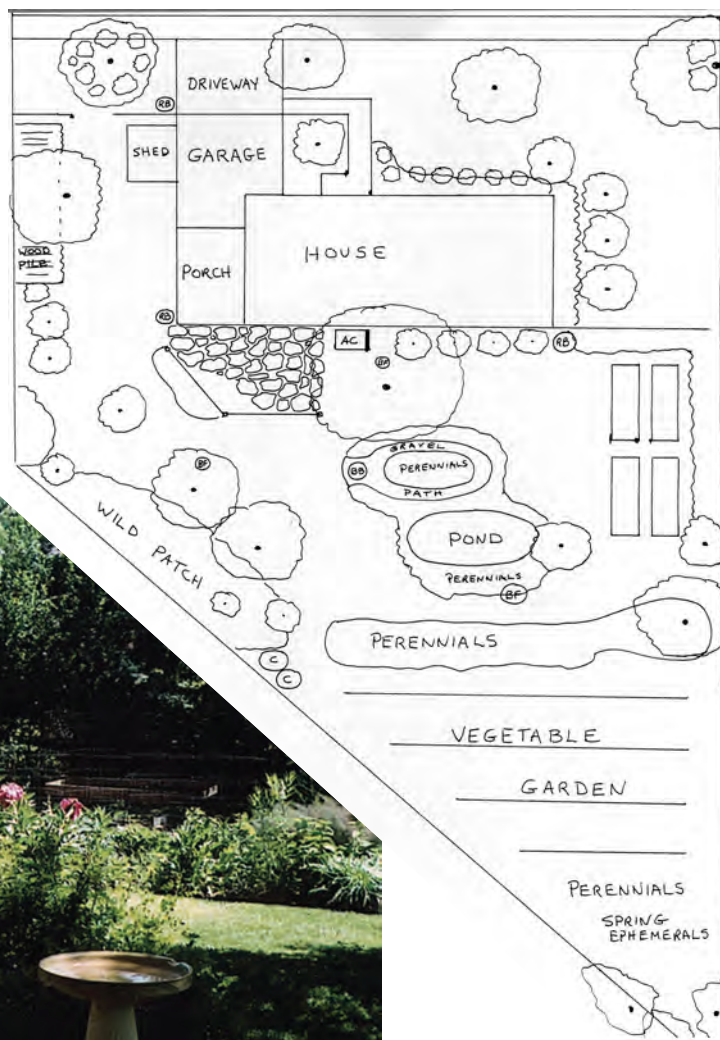


J. HADLOCK

Above: Hadlocks' preliminary garden plan and backyard before landscaping

Right: Hadlocks' final garden plan

Below: Hadlocks' backyard after landscaping



J. HADLOCK

of the activity that is sure to result from your efforts.

Next, create a planting plan, keeping in mind your answers to the important questions.

1. Select your trees first and decide where you want them. Next, choose your shrubs; then your smaller plants and groundcovers.
2. Select plants that are well-suited to the conditions of your property.
3. Plant with repetition — several individual plants of selected species rather than the “one of everything” approach.
4. Think layers — canopy, mid-story, shrubs, smaller plants, ground covers, leaf litter. Every plant layer increases the diversity of wildlife.
5. Think all seasons — flowers that bloom from early to late; fruits that ripen in succession.
6. Plant so that each layer connects somewhere to another layer. This allows wildlife to move vertically and horizontally through your garden.
7. Start small, one project at a time.

This may sound like a contradiction, but there is also an “undergardening” aspect to landscaping for nature. Choose an out-of-the-way area of your property and let it go natural, or wild, so you can see what happens when nature takes its own course. You can start by clearing turf grass and planting some native grasses and perennial flowers and then let the birds help you with the rest. They will plant all sorts of things as they move about your “test” patch.

Folks who live in apartments can also garden for nature, because even there, balconies or window boxes can be made attractive to wildlife. Vines in pots can be trained to grow up and around balcony railings and, with nectar-producing, tubular-shaped blossoms, can attract hummingbirds. Pots of flat topped flowers can attract butterflies, and host plants will nourish their caterpillars.

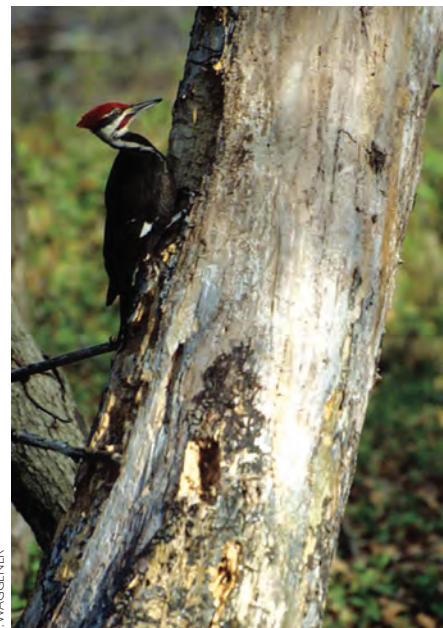
Keeping these basic things in mind — your site conditions and who you hope to attract — your design for nature can be whatever is attractive to you, as formal or informal as you like. Landscapes are always works in progress. If you try something that doesn't work, or you don't like the way it looks, you can change it. The really important thing is whether it satisfies you as well as wildlife. It should be a healthful place where people enjoy spending time and find connections with the natural world.



J. HADLOCK



J. WAGGENER



J. WAGGENER

Clockwise from top:

Planting a variety of species, heights and colors

Pileated Woodpecker on “dead” tree

The Hadlock's garden as a classroom

Natives In, Invasives Out

Next, what should go in and out of your property? A major objective of Audubon At Home is to encourage people to use native plants. Why are they so important to wildlife? Because they and the other native wildlife have evolved together. Each gets something it needs from the other. Wildlife gets food and shelter; plants get reproductive services (pollination and seed dispersal). And, they keep each other in check. The value to you is that natives are adapted to our soil, moisture and climate, and they have their own ways of dealing with insects and diseases. That means less watering and no need for pesticides and chemical fertilizers.

The opposite of “native” is “exotic,” and while some of these plants can be useful to wildlife and will be well-behaved in a garden, many of them, if they escape, can become extremely invasive. Because they don’t belong here and lack natural controls, they are now running rampant through our woods and meadows, and along our highways and streams.

They overwhelm and displace native flora and thus deprive birds and other wildlife of essential food needed to face the year’s many challenges, from raising young to surviving the winter.

What can you do about invasives?

1. Learn to recognize them.
2. Never plant them. If you have them, remove them.
3. Encourage nurseries not to sell them.
4. Participate in community removal events.

The enormity of the invasive problem can be seen at places such as Roosevelt Island, where English ivy has completely overwhelmed the ground and trees, or Huntley Meadows, where the forest floor is solid with Japanese stiltgrass, or along the W&OD Trail, where mile-a-minute vine seems to be engulfing everything. Happily, there are cases like the Thompson Wildlife Management Area outside of Linden, Virginia, where volunteers cleared the native plant trail of invasive garlic mustard that was encroaching on the trilliums, rue anemones, toothworts, lady slippers, and many other special wildflowers. It is important that



J. WAGGENER



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J. WAGGENER



C. THOMPSON-DEAHL



J. WAGGENER

Clockwise from top:

- Kudzu's exotic beauty (left) and invasive character (right)
- English Ivy out of control
- Combating Japanese Honeysuckle
- Removing invasive Mile-a-minute Vine

we do all we can to stop these invaders from crowding out our native plants and decreasing the biodiversity of this region's natural areas.

Breaking the Pesticide Habit

For many people, the word “insect” could just as well be spelled “pest.” We seem to have an aversion to creepy, crawly, buzzing things and a knee-jerk reaction to kill any that cross our paths. But, in the natural world and in our gardens, insects eat plants. It's a fact. For gardeners who like things perfect and beautiful, the sight of a chewed leaf sends them straight for a can of pesticide spray. And yet, 98 percent of insects are beneficial. Few pesticides, unfortunately, discriminate between “harmful” and “beneficial” creatures, and they often kill far beyond their target, reaching into the soil and killing organisms that are essential to healthy soil and healthy plants. They can harm or kill wildlife directly if exposure occurs during or soon after application. In addition, birds and bats that depend on a healthy population of insects will suffer as pesticides poison or kill off this food supply.

If you want birds, you must have bugs! Even seed-eaters feed insects to their young.

Giving up pesticides is not just for the birds. In a recent study, quoted in Seattle Audubon's *Gardening for Life*, ninety-nine percent of the four-year-old children studied have at least one compound in their systems traceable to organophosphorus pesticides. That's the group that includes diazinon and chlorpyrifos, two of the most common lawn and garden pesticides. Three quarter of the kids had two of the compounds in them. Another study by the University of Washington showed high levels of highly toxic compounds known as dialkylphosphates, even where families had not used pesticides for months. These pesticide residues can be tracked easily into the house, settle into the carpet and hang around for a long time.

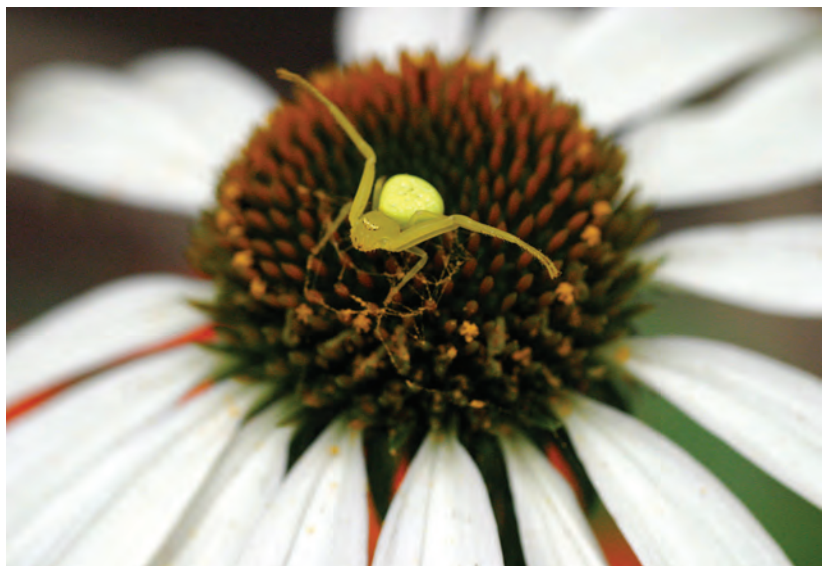
So, how do you go about freeing yourself from pesticide dependence?

1. TOLERANCE! Learn to overlook a few chewed leaves and try to look at bugs from a different perspective.
2. Maintain healthy soil by using compost and avoiding chemical fertilizers. This helps plants to resist pest and disease problems.
3. Encourage beneficial insects.
4. Use non-toxic alternatives to address pest problems — hand pick tomato hornworm and snails; use soapy water to wash off aphids; drown slugs in beer; use compost “tea” for mildew.
5. Avoid products labeled “highly toxic” or “may be fatal if swallowed.”

Let me leave as a final thought something poet, essayist, naturalist and avid gardener Diane Ackerman wrote in her book, *Cultivating Delight*: “If you're willing to poison yourself and the ecosystem to have a well-tamed garden, then what is the point of the garden?” §

Few pesticides, unfortunately, discriminate between “harmful” and “beneficial” creatures, and they often kill far beyond their target, reaching into the soil and killing organisms that are essential to healthy soil and healthy plants.

Crab Spider on coneflower



L. STEPHENS

NATIVE PLANTS FOR YOUR LANDSCAPE

The hard and fast rule for creating a beautiful, easy care landscape is to always choose the right plant for the right place. Assess the conditions in each area where plantings are desired and then choose the right plant for those conditions. Consider whether the area is in sun or shade and the moisture content of the soil when determining which plants to grow. Plants that are happy

EVERGREEN SCREENING TREES

American Holly (*Ilex opaca*)

Eastern Red Cedar (*Juniperus virginiana*)

Virginia Pine (*Pinus virginiana*)

LARGE DECIDUOUS SHADE TREES

American Sycamore (*Plantanus occidentalis*)

Beech (*Fagus grandfolia*)

Blackgum, Tupelo (*Nyssa sylvatica*)

Common Hackberry (*Celtis occidentalis*)

Green Ash (*Fraxinus pennsylvanica*)

Northern Red Oak (*Quercus rubra*)

Persimmon (*Diospyros virginiana*)

Pin Oak (*Quercus palustris*)

Red Maple (*Acer rubrum*)

Red Mulberry (*Morus rubra*)

River Birch (*Betula nigra*)

Sourwood (*Oxydendrum arboreum*)

Southern Red Oak (*Quercus falcata*)

Sweet Birch (*Betula lenta*)

Sweetgum (*Liquidambar styraciflua*)

White Oak (*Quercus alba*)

SMALL DECIDUOUS AND UNDERSTORY ACCENT TREES

Eastern Redbud (*Cercis Canadensis*)

Flowering Dogwood (*Cornus florida*)

Fringetree (*Chionanthus virginicus*)

Ironwood (*Carpinus caroliniana*)

Nannyberry Viburnum (*Viburnum lentago*)

Sassafras (*Sassafras albidum*)

Serviceberry (*Amelanchier arborea*)

EVERGREEN SHRUBS

Inkberry (*Ilex glabra*)

Mountain Laurel (*Kalmia latifolia*)

Rosebay Rhododendron (*Rhododendron maximum*)

with their conditions will thrive and require less care. Plants that are native to eastern North America, in general, and specifically to Virginia, are adapted to our climate and soil conditions. They are the best choices to complement a naturalized landscape scheme in our area.

DECIDUOUS SHRUBS

American Cranberry (*Viburnum trilobum*)

American Beautyberry (*Callicarpa americana*)

American Elderberry (*Sambucus canadensis*)

American Filbert (*Corylus americana*)

Arrowwood Viburnum (*Viburnum dentatum*)

Black Chokeberry (*Aronia melanocarpa*)

Blackhaw Viburnum (*Viburnum prunifolium*)

Bottlebrush Buckeye (*Aesculus parviflora*)

Buttonbush (*Cephalantha occidentalis*)

Common Ninebark (*Physocarpus opahfolius*)

Dwarf Chinkapin Oak (*Quercus prinoides*)

Dwarf Fothergilla (*Fothergilla gardeni*)

Highbush Blueberry (*Vaccinium corymbosum*)

Mapleleaf Viburnum (*Viburnum acerfolium*)

Northern Bayberry (*Myrica pennsylvanica*)

Oakleaf Hydrangea (*Hydrangea quercifolia*)

Pinxterbloom Azalea (*Rhododendron nudiflorum*)

Possumhaw (*Rex decidua*)

Red Chokeberry (*Aronia arbutifolia*)

Scarlet Elderberry (*Sambucus pubens*)

Shrubby St. Johnswort (*Hypericum prolificum*)

Silky Dogwood (*Cornus amomum*)

Spicebush (*Lindera benzoin*)

Sumac (*Rhus spp.*)

Sweet Azalea (*Rhododendron aborescens*)

Swamp Azalea (*Rhododendron viscosum*)

Virginia Sweetspire (*Itea virginica*)

Witch Hazel (*Hamamelis virginiana*)

Winterberry (*Ilex verticillata*)

VINES

Grape (*Vitis spp.*)

Virginia Creeper (*Parthenocissus quinquefolia*)

Virgin's Bower (*Clematis virginiana*)

GROUNDCOVERSAllegheny Pachysandra (*Pachysandra procumbens*)Sweet Woodruff (*Galium odoratum*)**GRASSES**Big Bluestem (*Andropogon gerardi*)Broom Sedge (*Andropogon virginicus*)Hairgrass (*Muhlenbergia capillaris*)Indian Grass (*Sorghastrum nutans*)Little Bluestem (*Andropogon scoparius*)Northern Sea Oats (*Chasmanthium latifolium*)Panicgrass/Switchgrass (*Panicum virgatum*)Side Oats Grama (*Bouteloua curtipendula*)Tufted Hairgrass (*Deschampsia caespitosa*)**FERNS**Christmas Fern (*Polystichum acrostichoides*)Cinnamon Fern (*Osmunda cinnamomea*)Lady Fern (*Athyrium filix-femina*)Maidenhair Fern (*Adiantum pedatum*)Marginal Wood Fern (*Dryopteris marginalis*)New York Fern (*Thelypteris noveboracensis*)Ostrich Fern (*Matteuccia pennsylvanica*)Royal Fern (*Osmunda regalis*)Sensitive Fern (*Onoclea sensibilis*)**WOODLAND WILDFLOWERS**Aster (*Aster spp.*)Black Cohosh (*Cimicifuga racemosa*)Bleeding Heart (*Dicentra eximia*)Bloodroot (*Sanguinaria canadensis*)Blue Phlox (*Phlox divaricata*)Columbine (*Aquilegia canadensis*)Dutchman's Breeches (*Dicentra cucullaria*)Goldenrod (*Solidago spp.*)Green and Gold (*Chrysogonum virginianum*)Turk's Cap Lily (*Lilium superbum*)Virginia Bluebell (*Mertensia virginica*)White Wood Aster (*Aster divaricatus*)Wild Geranium (*Eupatorium coelestinum*)White Woodland Milkweed (*Asclepias incarnata*)**SUNNY MEADOW WILDFLOWERS**Beardtongue (*Penstemon leavigatus*)Bee Balm (*Monarda didyma*)Black-Eyed Susan (*Rudbeckia fulgida*)Blazing Star (*Liatris ligulistylis*)Boneset (*Eupatorium perfoliatum*)Cardinal Flower (*Lobelia cardinalis*)Evening Primrose (*Oenothera biennis*)Golden Alexander (*Zizia aurea*)Ironweed (*Vernonia noveboracensis*)Joe-Pye Weed (*Eupatorium maculatum*)Lance-leaved Coreopsis (*Coreopsis lanceolata*)Milkweed (*Asclepias spp.*)Mountain Mint (*Pycnanthemum tenuifolium*)New England Aster (*Aster novae-angliae*)Purple Coneflower (*Echinacea purpurea*)Smooth Aster (*Aster laevis*)Sneezeweed (*Helenium autumnale*)Sundrop (*Oenothera perennis*)Tickseed Coreopsis (*Coreopsis tinctoria*)Turtlehead (*Chelone glabra*)*Used with permission of Reston Association.*

K. MUNROE



C. HEIZER



K. MUNROE

Left to right: Ox-eye Sunflower; Junco in hawthorn; Bumblebee and Butterfly Weed

BUTTERFLY GARDENING TIPS

1. Do not use pesticides and herbicides.
 - a. Most kill butterflies, caterpillars and beneficial insects.
 - b. Harmful insects quickly become immune.
 - c. Predatory insects and birds will control pests, given time. They may sometimes snack on your butterflies and caterpillars. You can protect caterpillars by hand-raising them in a cage or enclosed area.
2. Choose a sunny, protected area.
 - a. An area receiving at least 5 to 6 hours of sun daily is preferable.
 - b. Butterflies rarely feed in shade.
 - c. Most plants favored by butterflies prefer sun to partial shade.
 - d. Butterflies need shelter from strong winds.
 - e. For more sun, trim lower limbs of trees and large shrubs, or try container gardening.
3. Plant nectar flowers for adult butterflies.
 - a. Choose perennials and annuals so that some butterfly favorite will be blooming from early spring through late fall.
 - b. Plant large areas of one plant species or one color.
 - c. Native plants are usually preferred as butterflies will recognize these.
 - d. Choose single or semi-double blooms over highly double flowers; extremely fancy blooms generally have less nectar, and it is more difficult for butterflies to obtain.
 - e. Flat-topped blossoms or clusters of short, tubular flowers are favorites.
 - f. Deadhead (cut off dead blooms) to keep plants flowering abundantly.
4. Plant host plants for butterfly caterpillars.
 - a. You'll be able to observe life cycles.
 - b. Female butterflies will be drawn to your garden and encouraged to stay and lay eggs.
 - c. Without plants for caterpillars, there would be no butterflies.
 - d. Larvae do eat leaves and flowers of host plants but don't usually kill the plants. Chewed foliage may be unsightly, so screen host plants from main viewing area. Be sure you've planted enough to support the growing caterpillars.
5. Provide water.
 - a. Butterflies will drink from shallow puddles and dew on leaves.
 - b. They will also drink and "puddle" on damp or muddy areas.
6. If space is limited, try planting butterfly-attracting flowers in containers, window boxes or hanging baskets.
7. Provide rocks or bare soil to allow butterflies to bask in the sun.
8. Research before planting.
 - a. Host plants need to be for larvae of butterflies found in the area.
 - b. Determine if flowers/plants prefer dry or moist conditions, full or partial sun, acid or alkaline soil, etc.
 - c. Plants grow; don't place potentially large shrubs/trees where they will block sunlight from smaller flowers.
 - d. Start with a few of the butterflies' favorite flowers.
 - e. Observe plants in the wild, in gardens of others, in parks and at plant nurseries to find what grows well and attracts butterflies.
9. Butterfly gardens attract other wildlife, primarily birds and bees.
 - a. Bees rarely sting when feeding.
 - b. Use common sense when working in the garden around bees.



Monarch caterpillar on host milkweed

M. READY

- c. Butterfly gardens do not attract rats; rodents go where they can find food.

10. Protect your butterfly garden from human predators. Adults and children should be encouraged to watch and learn about butterflies and caterpillars without handling them.
11. Butterfly gardens don't need to consist exclusively of nectar and host plants. Including some of your favorite flowers and plants is fine.
12. Be patient! It may take butterflies more than one growing season to find your new garden.



L STEPHENS

Skipper on coreopsis

© WABC- B. Farron. 2/00

BUTTERFLY HOST AND NECTAR PLANTS

(A selection of native vegetation attractive either as hosts for caterpillars or as nectar sources for adults)

While butterflies are generally quite specific in their choice of plants for laying eggs and to sustain larvae (caterpillars), they may be attracted to several nectar sources. The following list indicates how a relatively few, but diverse, nectar sources like asters, clover, ironweed and one or more of the native milkweeds may attract a wide variety of butterflies.

Butterfly Species	Host Plants	Nectar Plants						
		Asters	Clover	Dogbane	Ironweed	Joe-pye Weed	Milkweeds	Thistles
Zebra Swallowtail	Paw-Paw			X			X	
Tiger Swallowtail	Tulip Poplar			X	X	X	X	X
Sulphur (species) *	Clover	X	X		X			X
E. Tailed-Blue	Clover	X	X	X				
Azure (species) **	Dogwood/Sumac			X			X	
Great Spangled Fritillary	Violets			X	X	X	X	X
Pearl Crescent	Asters	X		X			X	
Anglewings ***	Nettles	X	X				X	
Red Admiral	Nettles			X			X	
Common Buckeye	Gerardia	X	X		X		X	
Viceroy	Willows	X				X	X	
Monarch	Milkweeds	X	X	X			X	X
Silver-spotted Skipper	Black Locust		X	X	X	X		
Least Skipper	Grasses		X	X				

* Clouded and/or Orange Sulphur ** Spring and Summer Azure *** Anglewings: Question Mark and/or Eastern Comma

Referenced Nectar Sources: Asters/Composites (*Aster* species), Clovers (*Trifolium* sp.), Dogbane (*Apocynum* sp.), New York Ironweed (*Vermonia noveboracensis*), Joe-pye Weed (*Eupatorium* sp.), Milkweeds (*Asclepius* sp.), Thistles (*Cirsium* sp.).

Additional Nectar Sources: Narrow-leaved Sunflower (*Helianthus agustifolius*), Black-eyed Susan (*Rudbeckia hirta*), Goldenrods (*Solidago* sp.), Pickerelweed (*Pontederia cordata*), Tickseed Sunflower (*Bidens polylepis*) and Cardinal Flower (*Lobelia cardinalis*).

Sources: B. Farron, R. Smythe, N. Staunton and J. Waggener

Note: If your favorite nursery does not stock these native plants, you can suggest they be made available.

Wildlife of Northern Virginia — What's in Your Neighborhood

If you're new to Northern Virginia, or newly interested in this area's wildlife, you may not be aware of its richness and diversity.

In this section, you'll find provisional lists of various Northern Virginia wildlife that, in many cases, are conspicuous enough to be noticed by busy humans. One should consider these lists of birds, butterflies, dragonflies, amphibians, reptiles and mammals as provisional because our knowledge is incomplete and conditions, thus distributions, are changing. Nevertheless, lists like these help us appreciate how well, or how slightly, acquainted we are with our wildlife neighbors.

If you're new to Northern Virginia, or newly interested in this area's wildlife, you may not be aware of its richness and diversity. Considering just the more visible forms, nearly 50 species of mammals, over 60 amphibians and reptiles, at least 75 dragonflies (not including damselflies), more than 90 butterflies and 275 or more birds may be found in appropriate habitats in this region. The great majority of these species are natives, and their presence (or absence) can be an indication of habitat health. While some species are becoming quite rare, many can be found in, or can be attracted to, your neighborhood. The first step is learning what may be there. The next, intriguing, step is finding them. It can be a life-long pursuit and pleasure.

Birds

Birds are probably our most conspicuous reminders of the natural world. Tens of thousands of people in our region pay attention to birds. We look for them, take pains to identify them, and feed them. We become familiar with the regulars, are delighted to welcome back old acquaintances in their season, and are excited to find new species in our favorite places. Every day, whether it's for pleasure, the "lure of the list" or scientific curiosity, birders are exploring Northern Virginia's natural places and broadening the public's understanding of this region's birdlife.

Any listing of the total number of birds documented, historically, in Northern Virginia will not represent what you'll actually find here in a given year.

Permanent, year-round residents, such as Canada geese, blue jays, flickers and red-winged blackbirds, would represent slightly less than 20 percent of the total. About a quarter are summer residents only, that is, migrants from the south, such as barn swallows, wood thrushes or Baltimore orioles, that come north to breed, nest and raise young. One in six is a migrant from the north, birds such as green-winged teal, northern harrier and white-throated sparrow, which come down here for our milder winter.

Another quarter of the list, the transients, regularly uses Northern Virginia as an essential rest and refueling stop on their migra-



Green Heron

tions elsewhere. The balance of the provisional list (about 15 percent) consists of very rare species or strays (so-called accidentals). What these numbers tell us is that most of “our” birds spend much of each year somewhere else. They’re with us in this region only because habitat they rely on for wintering, breeding or migrating is here.

Anyone interested in regional birds can find far more than our 50 or so permanent residents. There are 100 species highlighted on the bird list that you should be able to see in the course of a year. That list could double if you make many visits to a wide variety of habitats throughout the year. The greatest number of species may be seen during the intense surge of the spring migration, but each season has its special cast of characters. A good field guide and some decent binoculars are all you need to start.

Perhaps the best way to get acquainted with local birds and other wildlife is to go often to a place with a mix of forest, edge, fields and wetlands. You’ll become aware of what’s normally there and what’s not, and you’ll see how things change through the seasons. Try keeping a journal, even if it’s only lists of species seen on each visit. Learn the songs and calls of local birds (an essential skill when summer foliage obscures your view). Join other birders on field trips; multiple pairs of eyes and ears will locate more birds, and you’ll benefit from others’ experiences.

To attract birds to your property, consider what you’ve learned in the field. Birds need water, food, shelter and nest sites. Each species has its own special preferences. Here are some things to consider:

- Water — essential year-round. The sight and sound of water features, such as trickling water, sprinklers and ponds, are very attractive to birds. Bird baths should be freshened often. Heating elements will keep water available to birds in winter.
- Food — native wildflowers, grasses, shrubs and trees that provide seeds, fruits, berries and insects. Fallen or dead trees can be a rich source of food. If using feeders (table, tube or other), offer a variety of seeds, fruits and suet appealing to several species such as black oil sunflower seeds for cardinals and chickadees; white millet for doves and sparrows; peanuts for titmice and jays; nyjer seed for finches; suet for woodpeckers; fruit and berries for mockingbirds and thrushes.
- Shelter and nest sites — native grasses, bushes, shrubs, trees and vines that offer layers of cover (such as natural forest and edge habitats). Gather brush and fallen limbs into shelters. If nest boxes are used, use the right size and shape, put them at appropriate places and heights, provide predator guards and keep them clean. And, keep cats indoors!

Two of the most important things to do for healthy bird habitat: reduce the amount of area in conventional lawn and avoid the use of pesticides.

Butterflies

“Most people are simply not aware of anything smaller than a robin; their senses are not adjusted to take in small wonders.” Since Robert Michael Pyle wrote that in his *Handbook for Butterfly Watchers* (Houghton Mifflin, 1984), things have changed



K. MUNROE



J. WAGGENER

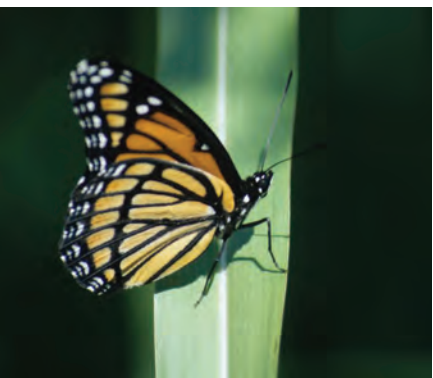
Top: Barn Swallow nest and young birds

Bottom: Feral cat

Perhaps the best way to get acquainted with local birds and other wildlife is to go often to a place with a mix of forest, edge, fields and wetlands.



M. READY



M. READY

Above: Monarch (top) and its look-alike, the Viceroy (bottom)

Below: A Monarch providing a touch of nature

a bit. It's likely that gardeners were always aware of butterflies, but birders and others are focusing increasingly on these fascinating creatures and what they can tell us about our environment.

Adult butterflies are in evidence in only certain months or weeks of the year, at certain times of the day, and in certain habitats. Most butterflies have very specific preferences at each stage of their life cycle as eggs, caterpillars (larvae), chrysalises (pupae) and, finally, adults. The constants in their lives are a need for:

- Sun — for the flowers butterflies depend on and to warm them enough to fly.
- Food — blooming plants, preferably natives, as nectar sources for most species; rotting fruit, sap flows and scat (animal droppings) for others.
- Water — shallow sources for certain species such as monarchs.
- Puddles — moist, muddy spots where some species (usually males) can “puddle” to ingest salts and nutrients.
- Open Spaces — clearings or tracks where males have observation posts or can patrol to watch for females and defend territory.
- Shelter — from wind and weather.
- Host Plants — that single plant species or set of plants required for egg laying and as food sources for caterpillars.

In our area, butterflies may be found anywhere there are suitable conditions. They're in evidence from the first warm days of spring until the first hard frost. Look for them to be about in sunny fields and along trails and edges by mid-morning and until late afternoon. Since they need body temperatures of 80 degrees or more to fly, you may find butterflies at rest in the earlier hours, basking to soak up radiant energy. Once they're airborne, you can see them nectaring, puddling, patrolling, mating or ovipositing (laying eggs). Some species have just a single brood in a year; many have two or more. A few migrate and/or winter over.

With close-focusing binoculars and the excellent field guides now available for butterflies, you'll find you can identify many of them without recourse to the traditional butterfly net. Time in the field and in the company of knowledgeable butterfly watchers will give you confidence in identifying adults, even caterpillars and pupae. In a normal year you should be able to find the species that are highlighted on the butterfly list.

Butterfly gardening enjoys increasing popularity. A substantial literature is available for anyone interested, but lists of plants and butterfly gardening tips are included in this book.

You'll find that many of the plants and other features used to attract birds to your property are equally effective with butterflies — sunny areas, a diversity of native wildflowers, shrubs for shelter, water features, etc. As your interest deepens, you



K. SHAW

may be inspired to study that far larger group within the insect order, Lepidoptera, the moths. In the meantime, what you do to attract butterflies will aid moths as well as bees and many other pollinators.

Dragonflies

In recent years, the availability of user-friendly field guides and better optics has brought new attention to dragonflies. Members of the order Odonata, dragonflies and their smaller relatives the damselflies (both are often referred to, generically, as dragonflies), are striking features of local fields and wetlands throughout the temperate months. From eggs laid in wetlands or water, nymphs emerge to forage underwater for weeks, months, even years. When they finally emerge, they do so transformed into handsome adults.

Dragonflies are carnivorous, with an appetite for many insects including their own kin. During their conspicuous adult phase, dragonflies may be found around rivers, streams, ponds or wetlands; also in nearby fields. Look for them as they bask in the cool of the morning. Cold-blooded like butterflies, dragonflies need to warm up before flying. They will often disappear when the sun is obscured, only to reappear when it returns. You can see males perching along edges and darting out to pursue females, chasing away other males, or engaging in repetitious territorial patrols. Mating pairs can often be found connected in tandem or in the characteristic “copulatory wheel.” In some species, males will remain connected while females lay eggs. Adults generally live for only a few weeks. A few of the larger dragonfly species are migratory.

Again, dragonflies can be drawn to some of the same features that attract birds and butterflies. Sunny, swampy pools and ponds with standing vegetation for perches will set the stage for dragonflies to prey on flies, mosquitoes, gnats and other small insects. Anything that degrades water quality, such as silt or pesticides, will drive away dragonflies.

Amphibians and Reptiles

The old Peterson field guide to reptiles and amphibians defines them, in part, this way: “REPTILES are clad in scales, shields, or plates, and their toes bear claws...AMPHIBIANS have moist, glandular skins and their toes are devoid of claws.” Most people never get close enough to these useful animals to learn much more than this. Some of this is natural. These rather secretive creatures, many nocturnal, live their lives below the threshold of our awareness. Among the amphibians, this particularly characterizes the voiceless salamanders. Frogs and toads are a different matter with their seemingly endless calling. Noisy or not, amphibians collectively consume prodigious quantities of insects and other invertebrates.

The relatively more visible reptiles, the snakes, lizards and turtles, also have important roles to play in maintaining healthy ecosystems, and, despite some people’s fears, they pose very little threat to humans. Most of Northern Virginia’s snakes are totally benign. Only two species of venomous snakes live here. The copperhead, which occurs throughout the region, is not an aggressive snake, usually

Top to bottom:

Halloween Pennant

Spotted Salamander

Snapping Turtle laying eggs



T. ROBINSON



K. MUNROE



J. WAGGENER



J. WAGGENER



J. WAGGENER

Top to bottom:

Young Red Fox

Young Gray Squirrel

Fawn



T. ROBISON

biting only when stepped on. The range of the larger and slightly more venomous timber rattlesnake extends only to the western and southern periphery of our area.

Amphibians and reptiles can be at home on your property if it is not manicured. Ponds and other wet spots invite salamanders, frogs and turtles. Stony places, leaves and other natural litter provide congenial shelter and foraging areas for toads and snakes. While many people think only of birds and butterflies when landscaping for nature, amphibians and reptiles also need our special consideration as their natural habitats are degraded or destroyed. This group includes some of Northern Virginia's most vulnerable, imperiled wildlife.

Mammals

Despite their generally larger size, local mammals remain relatively unknown to the human population (except perhaps as road kill). Partly this comes from many of them being nocturnal, such as raccoons, opossums, skunks and bats. Mostly it's the result of their elusiveness. Adaptations of vision and hearing usually make them aware of us long before we're aware of them. Getting to know mammals requires patience and an interest in learning to identify likely habitats, tracks, scat (droppings) and other telltale signs. Beaver and muskrat lodges are pretty visible; raccoon nests and fox dens can be harder to find.

If your property of interest is relatively large and diverse, you probably already have a number of our mammal species. Probably most commonly seen are chipmunks, squirrels, cottontails, woodchucks, foxes and deer. Seen less often are the small mammals, such as white-footed mice and meadow voles which constitute an important part of the prey base for larger mammals, raptors and other predators. Undisturbed pieces of woods and open space will attract native mammals. The same kinds of consideration that apply to attracting other wildlife — a diversity of native vegetation vs. turf grass, natural shelters and no pesticides — will yield dividends for these animals.

When people think about mammals around here, they may think first of deer, and attracting them isn't likely a priority. Beautiful and fascinating as they are, white-tailed deer have become a serious problem to gardeners, motorists and to the local environment in general. Over-abundant deer populations have been a regional problem for many years, and it continues to worsen as ever more open space is lost to suburbia. Their overgrazing of remaining natural areas deprives other wildlife of food and breeding habitat. The further deer roam in search of food, the more likely they are to encroach on settled landscapes and become traffic hazards. Deer management, including hunting and sterilization, is essential if healthy ecosystems are to be restored. Measures people can take to protect their properties include deer fences and netting as well as the use of relatively deer-resistant plants, such as milkweed, mountain mint, blue-flag, bluebells, goldenrod and ferns; trees such as red maple and beech; and shrubs such as spicebush and viburnums. §

BIRDS OF NORTHERN VIRGINIA

Following is a provisional list of species that may be found in appropriate habitats. A species' usual residency status is noted: Permanent resident (PR); summer resident (SR); winter resident (WR); transient or migrant (T); irregular visitor (V).

LOONS

- Common Loon (WR)

GREBES

- Pied-billed Grebe (WR)
- Horned Grebe (T)

CORMORANTS

- Double-crested Cormorant (SR)

BITTERNS, EGRETS, HERONS

- American Bittern (T)
- Least Bittern (SR)
- Great Blue Heron, (PR)
- Great Egret, (SR)
- Snowy Egret (T)
- Little Blue Heron, (T)
- Cattle Egret (T)
- Green Heron (SR)



L. STEPHENS

Great Blue Heron

Exceptionally rare, historical or accidental species — for which there are few or no recent records — are listed at the end. Other notations: *italics* (non-native species) and shaded (species you should be able to see or hear during a normal year).

- Black-crowned Night-Heron (SR)
- Yellow-crowned Night-Heron (SR)

IBISES

- Glossy Ibis (T)

VULTURES

- Black Vulture, (PR)
- Turkey Vulture (PR)

GEESE, SWANS, DUCKS

- Snow Goose (T)
- Canada Goose (PR)
- Mute Swan* (PR)
- Tundra Swan (WR)
- Wood Duck (PR)
- Gadwall (WR)
- American Wigeon (WR)
- American Black Duck (WR)
- Mallard (PR)
- Blue-winged Teal (WR)
- Northern Shoveler (WR)
- Northern Pintail (WR)
- Green-winged Teal (WR)
- Canvasback (WR)
- Redhead (WR)
- Ring-necked Duck (WR)
- Greater Scaup (WR)
- Lesser Scaup (WR)
- Long-tailed Duck (T)
- Bufflehead (WR)
- Common Goldeneye (T)
- Hooded Merganser (WR)
- Common Merganser (WR)
- Red-breasted Merganser (WR)
- Ruddy Duck (WR)

EAGLES, HAWKS

- Osprey (SR)
- Mississippi Kite (V)
- Bald Eagle (PR)
- Northern Harrier (WR)

- Sharp-shinned Hawk (WR)
- Cooper's Hawk (WR)
- Northern Goshawk (T)
- Red-shouldered Hawk (PR)
- Broad-winged Hawk (T)
- Red-tailed Hawk (PR)
- Rough-legged Hawk (V)
- Golden Eagle (V)

FALCONS

- American Kestrel (PR)
- Merlin (T)
- Peregrine (T)

GROUSE, TURKEY

- Ring-necked Pheasant* (PR)
- Ruffed Grouse (PR)
- Wild Turkey (PR)

QUAIL

- Northern Bobwhite (PR)

RAILS, COOTS

- King Rail (SR)
- Virginia Rail (SR)
- Sora (SR)
- American Coot (WR)

PLOVERS

- Semipalmated Plover (T)
- Killdeer (PR)

SANDPIPERS

- Greater Yellowlegs (T)
- Lesser Yellowlegs (T)
- Solitary Sandpiper (T)
- Spotted Sandpiper (T)
- Upland Sandpiper (T)
- Semi-palmated Sandpiper (T)
- Western Sandpiper (T)
- Least Sandpiper (T)
- White-rumped Sandpiper (T)
- Pectoral Sandpiper (T)
- Dunlin (T)
- Short-billed Dowitcher (T)
- Wilson's Snipe (WR)
- American Woodcock (SR)

GULLS, TERNS

- Laughing Gull (SR)
- Bonaparte's Gull (T)

- Ring-billed Gull (WR)
- Herring Gull (WR)
- Lesser Black-backed Gull (V)
- Great Black-backed Gull (WR)
- Caspian Tern (T)
- Common Tern (T)
- Forster's Tern (T)

DOVES

- Rock Pigeon* (PR)
- Mourning Dove (PR)

CUCKOOS

- Black-billed Cuckoo (T)
- Yellow-billed Cuckoo (SR)

BARN OWLS

- Barn Owl (PR)

TYPICAL OWLS

- Eastern Screech-Owl (PR)
- Great Horned Owl (PR)
- Barred Owl (PR)
- Short-eared Owl (WR)
- Northern Saw-whet Owl (V)

GOATSUCKERS

- Common Nighthawk (SR)
- Chuck-will's-widow (SR)
- Whip-poor-will (SR)

SWIFTS

- Chimney Swift (SR)

HUMMINGBIRDS

- Ruby-throated Hummingbird (SR)

KINGFISHERS

- Belted Kingfisher (PR)

WOODPECKERS

- Red-headed Woodpecker (PR)
- Red-bellied Woodpecker (PR)
- Yellow-bellied Sapsucker (WR)
- Downy Woodpecker (PR)
- Hairy Woodpecker (PR)
- Northern Flicker (PR)
- Pileated Woodpecker (PR)

FLYCATCHERS

- Eastern Wood-Pewee (SR)
- Yellow-bellied Flycatcher (T)

Acadian Flycatcher (SR) Alder Flycatcher (T) Willow Flycatcher (SR) Least Flycatcher (T) Eastern Phoebe (SR) Great-crested Flycatcher (SR) Eastern Kingbird (SR)

SHRIKES

 Loggerhead Shrike (V)

VIREOS

 White-eyed Vireo (SR) Yellow-throated Vireo (SR) Blue-headed Vireo (T) Warbling Vireo (SR) Philadelphia Vireo (T) Red-eyed Vireo (SR)

CROWS

 Blue Jay (PR) American Crow (PR) Fish Crow (PR) Common Raven (PR)

LARKS

 Horned Lark (PR)

SWALLOWS

 Purple Martin (SR) Tree Swallow (SR) N. Rough-winged Swallow (SR) Bank Swallow (SR) Cliff Swallow (T) Barn Swallow (SR)

CHICKADEES, TITMICE

 Carolina Chickadee (PR) Black-capped Chickadee (V) Tufted Titmouse (PR)

NUTHATCHES

 Red-breasted Nuthatch (V) White-breasted Nuthatch (PR)

CREEPERS

 Brown Creeper (WR)

WRENS

 Carolina Wren (PR) House Wren (SR) Winter Wren (WR) Sedge Wren (T) Marsh Wren (SR)

KINGLETS

 Golden-crowned Kinglet (WR) Ruby-crowned Kinglet (WR)

GNATCATCHERS

 Blue-gray Gnatcatcher (SR)

THRUSHES

 Eastern Bluebird (PR) Veery (SR) Gray-cheeked Thrush (T) Bicknell's Thrush (T) Swainson's Thrush (T) Hermit Thrush (WR) Wood Thrush (SR) American Robin (SR)

MIMIDS, THRASHERS

 Gray Catbird (SR) Northern Mockingbird (PR) Brown Thrasher (SR)

STARLINGS

 European Starling (PR)

PIPITS

 American Pipit (WR)

WAXWINGS

 Cedar Waxwing (PR)

WARBLERS

 Blue-winged Warbler (T) Golden-winged Warbler (T) Tennessee Warbler (T)

Tufted Titmouse

D. CHERNOFF

- Nashville Warbler (T)
- Northern Parula (SR)
- Yellow Warbler (SR)
- Chestnut-sided Warbler (T)
- Magnolia Warbler (T)
- Cape May Warbler (T)
- Black-throated Blue Warbler (T)
- Yellow-rumped Warbler (WR)
- Black-throated Green Warbler (T)
- Blackburnian Warbler (T)
- Yellow-throated Warbler (SR)
- Pine Warbler (SR)
- Prairie Warbler (SR)
- Palm Warbler (T)
- Bay-breasted Warbler (T)
- Blackpoll Warbler (T)
- Cerulian Warbler (T)
- Black-and-White Warbler (SR)
- American Redstart (SR)
- Phrothornatory Warbler (SR)
- Worm-eating Warbler (SR)
- Swainson's Warbler (SR)
- Ovenbird (SR)
- Northern Waterthrush (T)
- Louisiana Waterthrush (SR)
- Connecticut Warbler (T)
- Mourning Warbler (T)
- Kentucky Warbler (SR)
- Common Yellow-throat (SR)
- Hooded Warbler (SR)
- Wilson's Warbler (T)
- Canada Warbler (T)
- Yellow-breasted Chat (SR)

TANAGERS

- Summer Tanager (T)
- Scarlet Tanager (SR)

SPARROWS

- Eastern Towhee (PR)
- American Tree Sparrow (WR)
- Chipping Sparrow (SR)
- Field Sparrow (PR)
- Vesper Sparrow (T)
- Savannah Sparrow (WR)
- Grasshopper Sparrow (SR)
- Fox Sparrow (WR)
- Song Sparrow (PR)
- Lincoln's Sparrow (T)

- Swamp Sparrow (WR)
- White-throated Sparrow (WR)
- Harris' Sparrow (V)
- White-crowned Sparrow (WR)
- Dark-eyed Junco (WR)
- Snow Bunting (V)

CARDINALS, GROSBEAKS, BUNTINGS

- Northern Cardinal (PR)
- Rose-breasted Grosbeak (T)
- Blue Grosbeak (SR)
- Indigo Bunting (SR)
- Dickcissel (T)

BLACKBIRDS, ORIOLES

- Bobolink (T)
- Red-winged Blackbird (PR)
- Eastern Meadowlark (PR)
- Rusty Blackbird (WR)
- Brewer's Blackbird (V)
- Common Grackle (PR)
- Brown-headed Cowbird (PR)
- Orchard Oriole (SR)
- Baltimore Oriole (SR)

GROSBEAKS, FINCHES

- Purple Finch (WR)
- House Finch (PR)
- Pine Siskin (T)
- American Goldfinch (PR)
- Evening Grosbeak (V)

OLD WORLD SPARROWS

- House Sparrow (PR)

VERY RARE, HISTORICAL OR ACCIDENTAL SPECIES

Red-Necked Grebe, American White Pelican, Tri-colored Heron, White Ibis, Greater White-fronted Goose, Brant, European Wigeon, Common Moorhen, Sandhill Crane, Black-necked Stilt, Willet, Baird's Sandpiper, Long-billed Dowitcher, Franklin's Gull, Royal Tern, Least Tern, Black Tern, Snowy Owl, Long-eared Owl, Rufous Hummingbird, Vermilion Flycatcher, Northern Shrike, Brown-headed Nuthatch, Clay-colored Sparrow, Lark Sparrow, Henslow's Sparrow, LeConte's Sparrow, Seaside Sparrow, Lapland Longspur, Chestnut-sided Longspur, Yellow-headed Blackbird, Boat-tailed Grackle and Pine Grosbeak

Data Source: Audubon Society of Northern Virginia

BUTTERFLIES OF NORTHERN VIRGINIA

Following is a provisional list of species that may be present in appropriate habitats. Other notations: italics

SWALLOWTAILS (PAPILIONIDAE)

- Pipevine Swallowtail
- Zebra Swallowtail
- Black Swallowtail
- Giant Swallowtail
- Eastern Tiger Swallowtail
- Spicebush Swallowtail

WHITES AND SULPHURS (PIERIDAE)

- Checkered White
- Cabbage White*
- Falcate Orangetip
- Clouded Sulphur
- Orange Sulphur
- Cloudless Sulphur
- Little Yellow
- Sleepy Orange

GOSSAMER-WINGS (LYCAENIDAE)

- Harvester
- American Copper
- Coral Hairstreak
- Banded Hairstreak
- Striped Hairstreak
- Southern (Oak) Hairstreak
- Brown Elfin
- Henry's Elfin
- Eastern Pine Elfin
- Olive (Juniper) Hairstreak
- White "M" Hairstreak
- Gray Hairstreak
- Red-banded Hairstreak
- Eastern Tailed-Blue
- Spring Azure
- Summer Azure
- Appalachian Azure

BRUSH-FOOTED BUTTERFLIES (NYMPHALIDAE)

- American Snout
- Variegated Fritillary
- Great Spangled Fritillary
- Meadow Fritillary
- Silvery Checkerspot

(non-native species) and shaded (species you should be able to see during a normal year).



Zebra Swallowtail "puddling"

- Pearl Crescent
- Question Mark
- Eastern Comma
- Mourning Cloak
- American Lady
- Painted Lady
- Red Admiral
- Common Buckeye
- Red-spotted Purple
- Viceroy
- Hackberry Emperor
- Tawny Emperor
- Northern Pearly-Eye
- Appalachian Brown
- Carolina Satyr
- Little Wood Satyr
- Common Wood-Nymph
- Monarch
- Queen

SKIPPERS (HESPERIIDAE)

- Silver-spotted Skipper
- Long-tailed Skipper
- Hoary Edge
- Southern Cloudywing
- Northern Cloudywing

- Hayhurst's Scallopwing
- Dreamy Duskywing
- Sleepy Duskywing
- Juvenal's Duskywing
- Horace's Duskywing
- Wild Indigo Duskywing
- Common Checkered Skipper
- Common Sootywing
- Swarthy Skipper
- Clouded Skipper
- Least Skipper
- European Skipper
- Fiery Skipper
- Leonard's Skipper
- Cobweb Skipper
- Peck's Skipper
- Tawny-edged Skipper
- Crossline Skipper

- Southern Broken-Dash
- Northern Broken-Dash
- Little Glassywing
- Sachem
- Delaware Skipper
- Hobomok Skipper
- Zabulon Skipper
- Broad-winged Skipper
- Dion Skipper
- Dun Skipper
- Dusted Skipper
- Pepper and Salt Skipper
- Common Roadside Skipper
- Ocola Skipper

*Data Sources: H. Pavulaan, R. Smith, R. Smythe,
B. Steury (NPS), J. Waggener*

DRAGONFLIES OF NORTHERN VIRGINIA

Following is a provisional list of dragonfly species that might be found in appropriate habitats.

PETALTAILS (PETALURIDAE)

- Gray Petaltail

DARNERS (AESHNIDAE)

- Common Green Darner
- Comet Darner
- Swamp Darner
- Cyrano Darner
- Harlequin Darner
- Taper-tailed Darner
- Ocelated Darner
- Fawn Darner
- Springtime Darner
- Shadow Darner

CLUBTAILS (GOMPHIDAE)

- Dragonhunter
- Ashy Clubtail
- Lancet Clubtail
- Spine-crowned Clubtail
- Skillet Clubtail
- Cobra Clubtail
- Splendid Clubtail

Other notations: shaded (species you should be able to find in a normal year).

- Midland Clubtail
- Arrow Clubtail
- Russet-tipped Clubtail
- Laura's Clubtail
- Elusive Clubtail
- Black-shouldered Spinyleg
- Unicorn Clubtail
- Least Clubtail
- Southern Pygmy Clubtail
- Common Sanddragon
- Eastern Ringtail

SPIKETAILS (CORDULEGASTRIDAE)

- Tiger Spiketail
- Twin-spotted Spiketail
- Brown Spiketail
- Arrowhead Spiketail

CRUISERS (MACROMIIDAE)

- Stream Cruiser
- Swift (Illinois) River Cruiser
- Royal River Cruiser



T. ROBISON

Common Pondhawk (female) devouring a cranefly

EMERALDS (CORDULIIDAE)

- Selys' Sundragon
- Uhler's Sundragon
- Prince Baskettail
- Common Baskettail
- Stripe-winged Baskettail
- Mocha Emerald
- Clamp-tipped Emerald
- Umber Shadowdragon
- Stygian Shadowdragon

SKIMMERS (LIBELLULIDAE)

- Widow Skimmer
- Common Whitetail
- Twelve-spotted Skimmer
- Painted Skimmer
- Four-spotted Skimmer
- Blue Corporal
- Spangled Skimmer
- Yellow-sided Skimmer
- Golden-winged Skimmer
- Needham's Skimmer
- Great Blue Skimmer
- Slaty Skimmer
- Bar-winged Skimmer

- Band-winged Meadowhawk
- Blue-faced Meadowhawk
- Autumn (Yellow-legged) Meadowhawk
- Cherry-faced Meadowhawk
- Ruby Meadowhawk
- Little Blue Dragonlet
- Eastern Amberwing
- Blue Dasher
- Common (Eastern) Pondhawk
- Wandering Glider
- Spot-winged Glider
- Black Saddlebags
- Carolina Saddlebags
- Four-spotted Pennant
- Dot-tailed Whiteface
- Halloween Pennant
- Banded Pennant
- Calico Pennant
- Martha's Pennant

Data Sources: P.J. Dunne, K. Munroe, R. Orr, T. Robison, S. Roble, K. Sheffield, R. Smythe, J. Waggener, Odonata Central

AMPHIBIANS AND REPTILES OF NORTHERN VIRGINIA

Following is a provisional list of species that may be present in appropriate habitats. Other notations: *italics*

SALAMANDERS

- Red-spotted Newt
- Jefferson Salamander
- Spotted Salamander
- Marbled Salamander
- Northern Dusky Salamander
- Northern Two-lined Salamander
- Three-lined Salamander
- Four-toed Salamander
- Red-backed Salamander
- White-spotted Slimy Salamander
- Mud Salamander
- Red Salamander
- Seal Salamander

TURTLES

- Eastern Snapping Turtle
- Eastern Mud Turtle
- Eastern Musk Turtle
- Eastern Painted Turtle
- River Cooter
- Northern Red-bellied Turtle
- Spotted Turtle
- Wood Turtle (Threatened)
- Eastern Box Turtle
- Red-eared Slider*

LIZARDS

- Eastern Six-lined Racerunner
- Northern Fence-Lizard
- Five-lined Skink
- Southeastern Five-lined Skink
- Broad-headed Skink
- Little Brown Skink

FROGS AND TOADS

- Eastern American Toad
- Fowler's Toad
- Eastern Cricket Frog
- Cope's Gray Treefrog
- Green Treefrog
- Northern Spring Peeper
- Southeastern Chorus Frog
- American Bullfrog

(non-native species) and shaded (species you should be able to see or hear during a normal year).

- Southern Green Frog
- Pickerel Frog
- Southern Leopard Frog
- Wood Frog
- Eastern Spadefoot

SNAKES

- Northern Copperhead
- Eastern Worm Snake
- Northern Scarlet Snake
- Northern Black Racer
- Timber Rattlesnake
- Ring-necked Snake
- Cornsnake
- Black Rat Snake
- Eastern Hog-nosed Snake
- Mole Kingsnake
- Common Kingsnake
- Eastern Milksnake
- Northern Watersnake
- Rough Green Snake
- Queen Snake
- Northern Brown Snake
- Northern Red-bellied Snake
- Eastern Ribbonsnake
- Eastern Gartersnake
- Smooth Earthsnake

References and Sources: T. Akre, J. Blackburn, A. Robison and Atlas of Amphibians and Reptiles in Virginia, Virginia Department of Game and Inland Fisheries, 1999



Black Rat Snake

K. MUNROE

MAMMALS OF NORTHERN VIRGINIA

Following is a provisional list of species that may be present in appropriate habitats. Other notations: *italics*

POUCHED MAMMALS

- Virginia Opossum

SHREWS AND MOLES

- Masked Shrew
 Southeastern Shrew (Threatened)
 Pygmy Shrew
 Northern Short-tailed Shrew
 Least Shrew
 Eastern Shrew
 Star-nosed Mole
 Eastern Mole

BATS

- Little Brown Bat
 Northern Myotis
 Silver-haired Bat
 Eastern Pipistrelle
 Big Brown Bat
 Red Bat
 Hoary Bat
 Evening Bat

RABBITS AND HARES

- Eastern Cottontail

GNAWING MAMMALS

- Eastern Chipmunk
 Woodchuck
 Eastern Fox Squirrel
 Gray Squirrel
 Red Squirrel
 Southern Flying Squirrel
 Beaver
 Marsh Rice Rat
 Common Red-backed Gapper's Vole
 Pine Vole
 Eastern Harvest Mouse
 Deer Mouse
 White-fronted Mouse
 Eastern Wood Rat
 Meadow Vole
 Woodland Vole
 Muskrat

(non-native species) and shaded (species you should be able to find during a normal year).

- Southern Bog Lemming

- Black Rat*

- Norway Rat*

- House Mouse*

- Meadow Jumping Mouse

MEAT-EATING MAMMALS

- Bobcat

- Coyote*

- Red Fox

- Gray Fox

- Raccoon

- Long-tailed Weasel

- Mink

- Striped Skunk

- River Otter

HOOFED MAMMALS

- White-tailed Deer

References: Virginia DGIF and Mammals of the Carolinas, Virginia, and Maryland, University of North Carolina Press, 1985



J. WAGGENER

Above: Animal tracks in snow

Right: Eastern Cottontail

K. MUNROE



Neighborhood Watch

“You can observe a lot by just watching.”

Yogi Berra, quoted in David Sibley’s *Birding Basics*, Knopf, 2002

Birds and other wildlife have generally been valued by the public for the sport or recreation they afford, their beauty, or their contribution to the economy. That’s changing with the realization that wildlife can be important indicators of the state of the natural environment in our neighborhoods and region.

A lot is known about the wildlife of this region. Academic and government-sponsored studies range from individual endangered species to general population patterns and trends, the dynamics of entire ecosystems and much more.

Publications from agencies such as Virginia’s Natural Heritage Division and the Department of Game and Inland Fisheries provide authoritative data on the status and distribution of wildlife throughout the Old Dominion. The result is a wealth of information. Nevertheless, with the rate of change in the natural environment of Northern Virginia, it’s still difficult, with formal science alone, to know what wildlife is currently here, and where, and when.

“Citizen science” offers a way to answer questions about specific areas. Timely, on-the-ground collecting of basic data by experienced volunteers, looking at the same places over time, can be an effective way to inventory and monitor wildlife. When good field skills are matched by thorough record keeping and documentation (photos, specimen collection, etc.), the results can be useful to property owners, public agencies and officials making land-use decision. Essentially, this is descriptive science, establishing the presence, comings and goings of wildlife by answering the what, where and when kinds of questions, the factual basis for addressing the larger questions.

Citizen science has a long history in fact if not in name. The more than century-old Audubon Christmas Bird Count is an example. The U.S. Fish and Wildlife Service’s annual Breeding Bird Count has been going on for forty years. More recent annual events, such as the International Migratory Bird Count, the Great Backyard Bird Count, the Raptor Society’s Mid-winter Raptor Count, and the Audubon Society of Northern Virginia’s Winter Waterfowl Count and Breeding Bird Surveys, are filling important gaps in our knowledge of regional bird populations. Similar work is being done for butterflies through the annual North American Butterfly Association counts around July 4. Each of these events depends almost entirely on volunteers to accomplish.

Volunteers are also carrying out more site-specific projects. Using officially sanctioned protocols such as those adopted by the

Laura Farron and Marie Strassburger,
butterfly census



ASNV (L. STEPHENS)



J. WAGGENER

Audubon Naturalist Society and the Isaac Walton League, volunteers are monitoring invertebrate populations in streams throughout the region. Long-term bird surveys are being carried out by Audubon members and other volunteers at Occoquan Bay NWR, Dyke Marsh and other sites. Similar studies are underway for butterflies and dragonflies at representative Fairfax and Prince William sites.

Anyone interested in investigating the state of bird, butterfly, dragonfly or other local wildlife populations has opportunities through the Audubon Society of Northern Virginia or other organizations to do so. The ideal way to gain up-to-date information would be for each home, church, school, business or park to become an active monitoring site. A great many people observing, counting and recording can generate the kind of evidence needed for informed public decisions on wildlife and the natural environment. §

Norm Smith scoping wildlife on ASNV survey

The Nature of Change

In his book, *The Diversity of Life* (Harvard Univ. Press, 1992), Edward O. Wilson describes the incredibly complex fabric of biological life on our planet and how it is being unraveled by the actions of humankind. It requires little imagination to apply this global perception locally where the appearance, the very essence, of this region's natural environment has been changed.

This book has been about people who are bent on effecting positive change in the natural environment of Northern Virginia. They recognize our situation. They are finding ways to reduce or stop damage to our environment, and from the very many options open to all of us, they are undertaking repairs. They demonstrate that each of us can make changes that can immediately benefit wildlife. They've wrought wondrous results in individual gardens and landscapes by reducing pesticides, conserving and protecting water, removing invasives and planting natives, and have shown how these basic principles can be translated to neighborhoods and communities.

Realistically, there may not be any way to halt the loss in quantity of natural open space in an area as dynamic as this one, but determined people can see that important natural areas get proper, permanent protection and that decisions about land use reflect more than just conventional economics. Rational land-use policy depends on sound information about environmental costs and benefits. Unfortunately, if we don't know what's here, we don't know what is at stake. That can be changed if more people get involved in monitoring regional wildlife and their habitats.

It will take positive changes by many individuals and communities, businesses and institutions to restore anything like the true nature of Northern Virginia. But, much can be done and should be done if we are to pass along the special natural environment of this region to posterity. It is a most worthy endeavor. As Wilson concluded, "There can be no purpose more enspiriting than to begin the age of restoration, reweaving the wondrous diversity of life that still surrounds us."

The Audubon Society of Northern Virginia, the National Audubon Society and the Natural Resources Conservation Service wish you well in your own efforts to effect the nature of change in Northern Virginia. §



ASNV (L. STEPHENS)

Resources

NATIVE PLANT SOURCES

NON-PROFIT

Earth Sangha

10123 Commonwealth Blvd.
Fairfax, VA 22032
(703) 764-4830
info@earthsangha.org

COMMERCIAL

Hyla Brook Farm

Native Plants & Plants for Wildlife
270 Valentine Mill Road
Louisa, VA 23093
(540) 967-6160
www.hylabrookfarm.com

Sylva Native

RD#3, Box 1033
New Freedom, PA 17349
(717) 227-0486
www.sylvanative.com

Windy Hill Plant Farm

40413 John Mosby Highway
Aldie, VA 20105
(703) 327-4211
www.windyhill.net

BOOKS

A Birder's Guide to Virginia, Johnston, American
Birding Association, 1997.

Amphibians and Reptiles of the Carolinas and Virginia,
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- More Birding by Ear, Eastern/Central, Walton and Lawson, Houghton Mifflin (audio)

WEB

- Audubon At Home:
- National Audubon Society:
www.audubonathome.org
- Healthier Pest Control:
www.audubonathome.org/Healthy_Yard.html
- Pesticide Use: www.audubon.org/bird/at_home/ReducePesticideUse.html
- The Audubon Society of Northern Virginia:
www.asnv.org
- Alliance for the Chesapeake Bay:
www.acb-online.org

American Horticultural Society (River Farm):
www.ahs.org/river_farm/index.htm

Arlingtonians for a Clean Environment:
www.arlingtonenvironment.org

Audubon Naturalist Society:
www.audubonnaturalist.org

Chesapeake Bay Foundation:
www.cbf.org

Coalition for Smarter Growth:
www.smartergrowth.net

Cornell Lab of Ornithology:
www.birds.cornell.edu

Ducks Unlimited:
www.ducks.org

Earth Sangha:
www.earthsangha.org

Lady Bird Johnson Wildflower Center:
www.wildflower.org

Mid-Atlantic Exotic Pest Plant Council:
www.ma-eppc.org

National Pesticide Information Center:
<http://npic.orst.edu/gen.htm>

National Wildlife Federation:
www.nwf.org

The Nature Conservancy:
www.nature.org

North American Butterfly Association:
www.naba.org

North American Pollinator Protection Campaign:
www.nappc.org

Northern Virginia Bird Club:
www.nvabc.org

Northern Virginia Conservation Trust:
www.nvct.org

OdonataCentral:
<http://odonatacentral.bfl.utexas.edu/>

Piedmont Environmental Council:
www.pecva.org

Potomac Conservancy:
www.potomac.org

Prince William Conservation Alliance:
www.pwconserve.org

Raptor Conservancy of Virginia:
www.raptorsva.org

Reston Association:
www.reston.org

Sierra Club (Virginia Chapter):
www.virginia.sierraclub.org

Trout Unlimited (Northern Virginia Chapter):
www.nvatu.org

Virginia Bluebird Society:
www.virginiabluebirds.org

Virginia Conservation Network:
www.vcnva.org

Virginia League of Conservation Voters:
www.valcv.org

Virginia Native Plant Society:
www.vnps.org

Potowmack Chapter:
www.vnps.org/chapters.html

Prince William Wildflower Society:
www.vnps.org/wildnews.html

Virginia Outdoors Foundation:
www.virginiaoutdoorsfoundation.org

Virginia Society of Ornithology:
www.virginiabirds.net

Washington Area Butterfly Club:
<http://users.sitestar.net/butterfly>

Wildlife Rescue League:
www.wildliferescueleague.org

Xerces Society for Invertebrate Conservation:
www.xerces.org

GOVERNMENT AGENCIES

Alexandria Dept. of Recreation, Parks & Cultural Activities: <http://ci.alexandria.va.us/recreation>

Fairfax County Park Authority:
www.fairfaxcounty.gov/parks/resources

Loudoun County Parks:
www.loudoun.gov/services/parks.htm

National Park Service:
www.nps.gov

Center for Urban Ecology (National Capital Region):
www.nps.gov/cue

Weeds Gone Wild – Alien Plant Invaders of Natural Areas: www.nps.gov/plants/alien

Northern Virginia Regional Park Authority:
www.nvrpa.org

Northern Virginia Soil & Water Conservation District:
www.fairfaxcounty.gov/nvswcd

Prince William County Park Authority:
www.pwcparks.org

U.S. Dept. of Agriculture Natural Resources Conservation Service (NRCS): www.nrcs.usda.gov

Composting Tip Sheet:
www.nrcs.usda.gov/feature/backyard/Compost.html

Backyard Conservation Tip Sheet:
www.nrcs.usda.gov/feature/backyard

Ecological Sciences Tools and Documents – Technical Notes:
www.nrcs.usda.gov/technical/ecs/database/technotes.html

Wildlife Habitat Tip Sheet:
www.nrcs.usda.gov/feature/backyard/WildHab.html

Mulch Tip Sheet: www.nrcs.usda.gov/feature/backyard/mrvmulch.html

Nutrient Management Tip Sheet:
www.nrcs.usda.gov/feature/backyard/NutMgt.html

Water Conservation Tip Sheet:
www.nrcs.usda.gov/feature/backyard/watrcons.html

Plants Database:
<http://plants.usda.gov>

U.S. Environmental Protection Agency:
www.epa.gov

Landscaping with Native Plants Factsheet:
www.epa.gov/greenacres/nativeplants/factsht.html

U.S. Fish and Wildlife Service:
www.fws.gov

Chesapeake Bay Field Office:
www.fws.gov/chesapeakebay

Virginia Department of Conservation and Recreation:
www.dcr.state.va.us

Virginia Department of Environmental Quality:
www.deq.virginia.gov

Virginia Department of Forestry:
www.dof.virginia.gov

Guidelines for Rain Gardens:
www.dof.virginia.gov/rfb/rain-gardens.shtml

Virginia Department of Game and Inland Fisheries:
www.dgif.state.va.us

GOVERNMENT OFFICIALS

FEDERAL

U.S. Congress:
 U.S. Senate, Senators John Warner and George Allen:
www.senate.gov
 U.S. House of Representatives, Congressmen Jim Moran (8th Dist.), Frank Wolf (10th) and Tom Davis (11th): www.house.gov

STATE

Virginia General Assembly:
 Virginia House of Delegates: <http://house.state.va.us>
 Virginia Senate: www.senate.state.va.us

LOCAL (SELECTED)

Alexandria City: <http://ci.alexandria.va.us>
 Arlington County: www.co.arlington.va.us
 Fairfax County: www.fairfaxcounty.gov
 Fauquier County: www.fauquiercounty.gov
 Loudoun County: www.loudoun.gov
 Prince William: www.co.prince-william.va.us
 Stafford County: www.co.stafford.va.us



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Clockwise from top left: Native plants bordering parking lot's impervious surface; Bracket Fungus at Turkey Run Park; Northern Cardinal; Waterford street scene

The Audubon Society of Northern Virginia

Celebrating a quarter century protecting birds, other wildlife and their habitats throughout Northern Virginia.



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Audubon At Home
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Working to preserve
the natural heritage of
a dynamic region



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