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Healthier Yards... Healthier Neighborhoods... Healthier Habitats

Our backyards are our private spaces. They are our pieces of the world. But a backyard is also part of a larger landscape we share with our community and with plants and wildlife. The health and well being of all of us depends on having a clean, healthy, sustainable place to live. How we take care of our yards and properties–the water and other resources we use, the fertilizer and pesticides we apply, the type of plants and landscape features we choose–impacts the health and quality of our living space, as well as that of our human and wildlife neighbors. Healthier yards for our families mean healthier neighborhoods for our community, and healthier habitats for all living things.

No matter how small, our yards and properties are becoming more and more important as wildlife habitat. Loss, fragmentation, and degradation of suitable habitat are the leading causes of population declines in birds, other wildlife, and plants. With nearly 80 percent of the wildlife habitat in the United States occurring on private lands[1] and an average of 2.1 million acres converted to residential use every year,[2] our backyard habitats are critically important pieces holding together an increasingly fragmented landscape. Our garden and landscape choices directly affect the health of that habitat for ourselves and for the naturally occurring wildlife and plants that must depend on it to a larger and larger extent.

Our actions at home are also intimately connected to the health and quality of our larger environment–our local ecosystems, our watersheds, our regional landscapes, and beyond. Whether we live ten feet or ten miles from the nearest stream, river, or coast, everything that washes off our terrace, driveway, lawn, or garden has the potential to make its way eventually into local surface waters. Any pesticides, fertilizers, yard waste, engine oil, lawn mower fuel, and other substances that fall in our yards can contaminate local rivers, streams, lakes, estuaries, and coastal waters. Some also may contaminate soils, or even reach underground aquifers and contaminate groundwater supplies. Consider also that many plant species introduced as ornamentals for home gardens have escaped cultivation, displacing native plants and threatening natural ecosystems nationwide. Our stewardship of our piece of the world has ramifications around the world–literally.

We Can Make a Difference!

Most of us envision a typical yard as a mowed lawn bordered by an assortment of shrubs, trees, and flowers that are readily available at the local garden center or nursery. Whether we live in the desert southwest, temperate northeast, or somewhere in between, such a landscape is widespread and familiar. Less familiar to many of us is the price that we pay, directly and

[1] Natural Resources Conservation Service, 1996
[2] Vesterby & Krupa, 2001

indirectly, to create and maintain such a yard. Homeowners pay a price in time and money, and we all pay in reduced water supply, deteriorating water quality, and the loss of critically important wildlife habitat.

Many homeowners apply large amounts of pesticides, water, and fertilizers to their lawns in an attempt to keep them weed-free and perpetually green. A turf monoculture has essentially no value as wildlife habit. The plants commonly available at garden centers and nurseries are typically exotic ornamentals – plants that may or may not provide the food and cover required by native wildlife and that can, if they are invasive, undermine or even displace native plant communities.

In every backyard and on every property, there's the potential to create healthier habitat. Simple actions—conserving water, reducing our use of pesticides, planting native species—can lead to measurable improvements in environmental health and habitat quality. Long-term success depends on all of us taking an active role in conservation—in simple ways, in everyday life, in our own backyards.

Water Conservation is Crucial

The widespread shortage of clean water has been named the biggest environmental issue we face in the 21st century.[3] What we plant and how we landscape directly influence our outdoor water needs—and our potential for wasting water. Lawns require two-and-a-half to four times more water than shrubs and trees.[4] Native plants, adapted to local climatic and hydrologic conditions, generally do not need the supplementary watering that exotic ornamentals require. Perhaps less apparent is the substantial effect that our gardening and landscaping choices have on the amount of water that runs off our land instead of seeping down to recharge groundwater supplies. A typical city block generates about nine times more runoff than a wooded area of the same size,[5] while a half-acre suburban lot generates about three times more runoff.[6] Plant choice, landscaping materials, and general soil health can make an enormous difference in whether our aquifers get recharged.

Water lost as runoff diminishes the quantity of our water supply and also its quality. Pesticides and fertilizers applied unnecessarily or improperly to our lawns and gardens often contribute to water quality problems. The 2000 National Water Quality Inventory[7] reports that 39 percent of assessed rivers and streams, 45 percent of assessed lakes, ponds, and reservoirs, and 51 percent of assessed estuaries in the U.S. are polluted. Urban runoff contributes heavily to these water quality problems. It is the largest source of water quality impairment after sewage treatment plant discharges in surveyed estuaries, and it is the third largest source of impairment (after agricultural runoff and hydrologic modifications) in surveyed lakes, ponds, and reservoirs.

A United States Geological Survey analysis of 20 major river basins and aquifer systems[8] reports that complex mixtures of nutrients and pesticides are "almost always" *(p. 6)* found in the streams and groundwater of areas with significant agricultural or urban development. It also found "a widespread

[3] United States Environmental Protection Agency, 2002a
[4] American Water Works Association, 2001
[5] US EPA, 1996
[6] Kelly, Kidwell, & Lehrer, 1998
[7] US EPA, 2002b
[8] United States Geological Survey, 1999

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occurrence of some insecticides commonly used around homes and gardens and in commercial and public areas. In fact, these insecticides occurred at high frequencies, and usually at higher concentrations, in urban streams than in agricultural streams" *(p. 10).* The report goes on to say that nitrogen and phosphorous (fertilizer components) concentrations in streams "commonly exceed" *(p. 6)* levels that can contribute to excessive growth of algae and other aquatic plants, and that "almost every urban stream sampled had concentrations of insecticides that exceeded at least one (water quality) guideline" *(p. 10)*.

Sobering Facts About Lawn and Garden Pesticide Use

Lawn and garden pesticide use is widespread and growing. Homeowners apply an estimated 78 million pounds of insecticides, herbicides, and fungicides per year to their homes, lawns, and gardens—not including applications made by pest control or lawn care professionals.[9] Approximately half of all U.S. households treat their yards with some sort of lawn or garden pesticide alone (professional or do-it-yourself applications).[10] United States households use greater quantities of herbicide than of any other pesticide, with over 50 percent more herbicides used in 1999 than in 1979. Between 1998 and 1999 alone (most recent data), the amount of herbicides applied by homeowners jumped by five million pounds—an increase of ten percent.[11]

Of even greater concern is that pesticides are often applied unnecessarily, unknowingly or because the user does not know of healthier pest control alternatives. According to a recent, peer-reviewed analysis of outdoor residential pesticide use, a sizable number of households "apply more than recommended doses," "treat symptoms of pest problems without suitable information about the causes," and "do not read pesticide labels, follow the directions, or obtain information about precautions and proper uses against specific pests when reading labels."[12]

Some consumers do not always realize when they are using a pesticide product. "Weed and feed" products, which contain herbicides as well as fertilizers, are particular sources of confusion. In one residential survey of lawn care practices, 63 percent of 981 residents in one watershed reported using "weed and feed" products, but only 24 percent realized that they were actually applying herbicides.[13]

Surveys indicate that the general public recognizes that there are risks associated with the use of pesticides. Despite this, however, many people continue to use them because they are not aware of healthier pest control options.[14] Lawn and garden pesticides should be used only as a last resort, and then consciously, carefully, and correctly. Pesticide users must read pesticide product labels and seek help if they do not understand how to properly use a product, dispose of unused product, or dispose of empty product containers. Use and disposal advice can be found through Cooperative Extension Services, the National Pesticide Information Service, and elsewhere (see Resource section, p. 44).

We need to recognize that any pesticide may kill beneficial and non-pest species, may not stay where we apply it, and may persist in the environment for years.

[9] Donaldson, Kiely, & Grube, 2002
[10] Templeton, Zilberman, & Yoo, 1998
[11] Donaldson et al., 2002
[12] Templeton et al., 1998, p. 420A
[13] Schueler & Swann, 2000
[14] Templeton et al., 1998; Whitford, 1993

Birds, butterflies, honeybees, lady beetles, earthworms, and many other organisms are frequently the unintended victims of lawn and garden pesticide use. Pets and children are also exposed to potential health problems. In a recent University of Washington study of pesticide exposure among children living in Seattle, traces of garden chemicals were found in 99 percent of the 110 children tested. Significantly higher concentrations were found in children whose parents reported using pesticides in their gardens.[15]

As discussed above, commonly used lawn and garden pesticides are routinely found in surface and groundwater throughout the country. Many can also persist in soil and garden litter, and can be carried on our feet into our homes.

The environmental and health risks directly associated with exposure to low-level concentrations of pesticides are still not clear. There is, however, emerging concern that some pesticides pose a threat at even very low concentrations. Two recent articles in the *Proceedings of the National Academy of Sciences* independently report that gross developmental abnormalities in frogs were associated with extremely low concentrations of commonly used pesticides, atrazine in one study,[16] atrazine and malathion in the second.[17] The concentrations that deformed the frogs were lower than those the EPA considers safe for drinking water. Atrazine is among the most widely used herbicides in agriculture, and it is also registered for weed control on residential lawns, golf courses, sod farms, and other non-agricultural areas. Malathion is a nonsystemic, broad-spectrum organophosphate insecticide. It is registered for use on dozens of agricultural crops and for many non-agricultural uses, including residential use. It is also used for mosquito control.

Compounding the health and environmental risks of widespread pesticide contamination is the fact that pesticides are often found in complex mixtures in the environment. Over ten percent of the urban streams sampled in the USGS study cited above contained "a mixture of the insecticides diazinon and chloropyrifos, along with at least four other herbicides." There is as yet considerable uncertainty regarding the nature and magnitude of the risks and impacts associated with multiple pesticides occurring together in the environment.

Nurture Your Natives

Long-term environmental protection depends on restoring and maintaining healthy, functioning, natural ecosystems. Development and other human activities have fragmented landscapes to the detriment of biodiversity and natural processes. By planting native plants, we can help counter the effects of fragmentation by maintaining these basic ecosystem building blocks, and the birds, butterflies, and other wildlife that they attract and support. As the area of our native plantings increases in size, and as their structure and composition more closely mimic that of naturally occurring native habitat, our yard and neighborhood gardens serve as critical pieces holding together our increasingly fragmented landscape. An effective conservation strategy must not only protect high-quality natural areas but also must involve buffering and connecting those areas. Using more native plants in our landscapes is an important first step toward implementing this strategy.

Native plants offer additional benefits to home and community landscapes.

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[15] Lu, Knutson, Fisker-Andersen, & Fenske, 2002
[16] Hayes et al., 2002
[17] Kiesecker, 2002

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Since native plants have evolved in response to local environmental conditions, they seldom need additional water and fertilizers once they are established. For the same reason, they can better resist and recover from pest infestations and therefore rarely need pesticide treatment. The dense, deep root systems of many natives make them effective for erosion control and filtering of contaminated runoff. These environmental advantages–water savings, pesticide elimination, erosion control, pollution prevention–translate into time and cost savings as well. To imagine your savings, just think about the lowered maintenance costs and time associated with native plantings and natural landscapes–less mowing (and fuel), watering, replanting of annuals, pest control, and fertilizing.

Perhaps the greatest benefits of planting native plants are most difficult to quantify–the beauty, sense of place, and portal to nature they offer. Native plants can reconnect us with the natural world everyday and in our own backyard. Discovering their changing textures, scents, and hues with changes in daylight and seasons, noticing how birds and insects visit and use them, learning their flowering and fruiting cycles–all these provide opportunities to explore and reconnect with our natural world. With increasing familiarity comes an increasing sense of stewardship. Our native plants are part of our unique local natural heritage–a heritage we need to protect and preserve. In an era of increasing landscape homogenization, preservation and recreation of this natural heritage can be immensely satisfying and fulfilling.

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Evict Your Invasives

Tens of thousands of plant species have been introduced to the United States over the past centuries. They were brought, intentionally or unintentionally, from around the globe and have become embedded in our culture and landscapes. Many of these non-native plants are valuable agricultural crops (wheat, rice) or beloved elements in our gardens (tulips, peonies). An estimated 5000 species, however, have escaped cultivation and are found growing in the wild (Morse, Kartesz, & Kutner, 1995). *"Invasive species" are those non-natives that displace native plants and alter the structure of our natural communities.*

Invasive plants infest about 100 million acres in the U.S. and spread 14 percent each year (Babbitt, 1998). *Wetlands, forests, and grasslands, no matter how remote or how small, are all under assault. Invasives damage parks, national parks, wildlife refuges, roadsides, and backyards.*

Some of our most destructive invasive species (purple loosestrife, kudzu, saltcedar) were first introduced for landscaping purposes as ornamentals, windbreaks, or for erosion control. Despite its widespread recognition as a serious invader of wetlands and its legal designation as a noxious weed in over 20 states, purple loosestrife continues to be promoted and sold in several states. In part that arises from a failure to recognize that what is non-invasive in one region may be a serious problem in another. In fact, many commonly used and readily available non-native ornamental plants are invasive in certain areas—examples include English ivy, oriental bittersweet, vinca, Norway maple, and Japanese barberry.

Invasive plants are a big problem. As gardeners, consumers, and stewards of our piece of the world, we can do a number of things to help:

- ❖ ***Learn which plants are invasive where we live.*** *Share the information with neighbors, landscapers, and local nurseries.*
- ❖ ***Do not buy or share invasive plants.***
- ❖ ***Remove invasives from our own property.***
- ❖ ***Volunteer for invasive control efforts in our community.*** *Native plant societies, local Audubon chapters, and other groups often have "Pull-Ivy Days" and similar events.*

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