

Stories
FROM THE
CONEWAGO

THE VALUE OF
CONSERVATION
TO LANDOWNERS,
NEIGHBORS, COMMUNITY,
&
SOCIETY



CONEWAGO CREEK
INITIATIVE

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Stories FROM THE CONEWAGO

THE VALUE OF CONSERVATION TO LANDOWNERS,
NEIGHBORS, COMMUNITY AND SOCIETY

Over the last several years, a lot of exciting conservation work has been going on in a small watershed in south-central Pennsylvania. The Conewago Creek Initiative is a partnership of organizations and individuals working toward improved water quality and healthy, productive farms and communities in the Conewago Creek watershed in Dauphin, Lancaster and Lebanon Counties, Pennsylvania.

Since 2009, the initiative has worked with many local residents and landowners to promote adoption of conservation practices on farms and other lands. Conservation not only benefits the landowner, but provides value to all of us through productive soil, food production, groundwater recharge, wildlife habitat, clean air and water — all benefits of a healthy environment. These benefits are called “ecosystem services.”

These are the stories of hard-working landowners in the Conewago Creek watershed and how their conservation efforts have provided valuable ecosystem services that benefit all of us. While it takes a long time to confirm improved water quality, recently sampled fish and insect populations suggest that the efforts of these and other landowners are making a positive difference for the stream.

We hope these stories inspire others in the Conewago watershed and beyond to practice conservation and land stewardship. This publication gives you information and a roadmap to increase the ecosystem services provided by your land.

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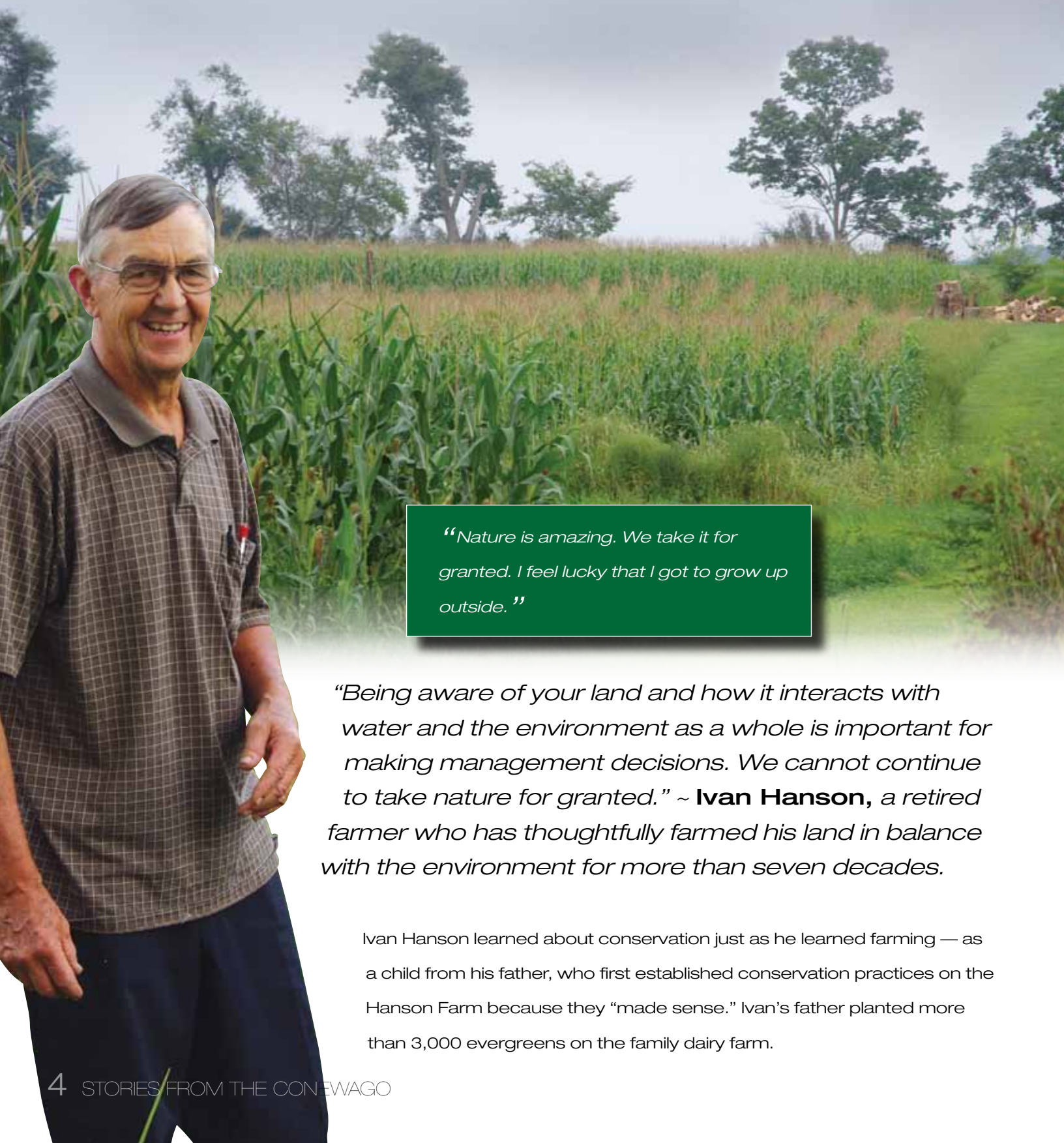
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IVAN HANSON

BUILDS UPON A LEGACY OF CONSERVATION ON HIS FARM



“Nature is amazing. We take it for granted. I feel lucky that I got to grow up outside.”

*“Being aware of your land and how it interacts with water and the environment as a whole is important for making management decisions. We cannot continue to take nature for granted.” ~ **Ivan Hanson**, a retired farmer who has thoughtfully farmed his land in balance with the environment for more than seven decades.*

Ivan Hanson learned about conservation just as he learned farming — as a child from his father, who first established conservation practices on the Hanson Farm because they “made sense.” Ivan’s father planted more than 3,000 evergreens on the family dairy farm.

In the 1940s, Ivan worked alongside his father to “create less work and take care of the land” by strip cropping, maintaining grassed waterways and building terraces.

Before farming equipment had hydraulics, harrows had to be picked up manually when crossing over ditches. The Hansons decided to avoid the consistently wet ditches, lessening the time it took to prepare the fields, while also allowing grass to grow and reducing the soil runoff into the Little Conewago Creek.



Even when the technology was available to put those ditches back into production, the Hansons kept them as grassed waterways because they saw the benefit to water quality

and decided that was more important to the long-term health of the farm.

Today, on the 114-acre Hanson Farm, Ivan and the farmers who lease his land to grow crops practice conservation tillage, fencing that excludes livestock from the creek, riparian buffers and crop rotation.

Conservation practices like no-till require careful watching of the weather and waiting to apply manure until the forecast is clear of rain that will wash the nutrients away. On the other hand, no-till creates less soil runoff and reduces the time it takes to prepare a field for planting, saving gas and labor costs.

The Hansons in 2001 planted a riparian buffer through USDA’s Conservation Reserve Enhancement Program, adding 7.7 more acres of woodland to their property. Another 2.5 acres was added in 2012.

To keep excess nutrients in cow manure from entering the stream, cows are fenced away from the



stream and manure from the barnyard is stored in a roofed storage facility. When the weather looks good, the manure is ready to spread on the fields to nourish the crop.

Ivan’s son-in-law keeps several honeybee colonies to help pollinate local crops and produce honey, sold at a small stand by the door to their house.

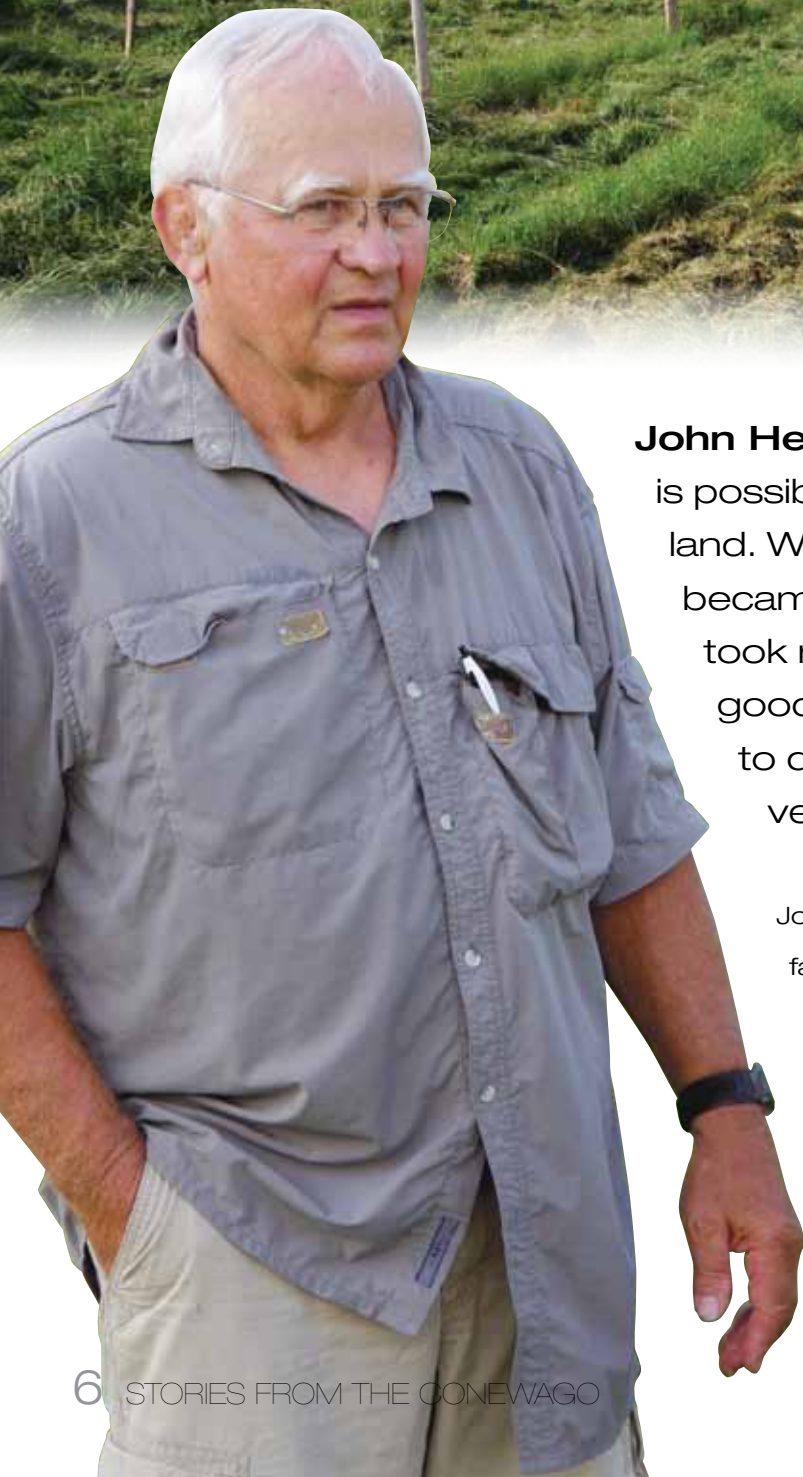
All of these practices and management decisions work together to create a productive farm and ecosystem.

Ivan understands that conservation practices, while benefiting soil and water health also have the potential to improve farming productivity. He is pleased with his decisions and every year adds new conservation practices.

“Nature is amazing. We take it for granted. I feel lucky that I got to grow up outside,” says Ivan.



JOHN HERTZLER PLANTS A YOUNG FOREST ALONG THE CREEK



John Hertzler is on a mission to show what is possible when people commit to heal their land. With John's careful tending a few trees became a few thousand, and a young forest took root. "I have a passion to make it a good tree planting because I have the time to do it," he says. Trees and nature "are very much a part of me."

John Hertzler was born and raised on his family's dairy farm in the Conewago watershed, and has fond childhood memories of driving tractors and spending lots of time daydreaming outside. He enjoyed hunting for rabbits on frosty November mornings and collecting butterflies for his mother to mount and study. From her, he learned a deep love of the natural world.

As John grew up and later, when he farmed the land as an adult, the cows walked and grazed the muddy streambanks, keeping any grass or shrubs from rooting.

When he retired from farming, John decided to devote himself to restoring 14 streamside acres of his 60-acre property to forest and planted native trees and shrubs — to give something back to nature and bring the streambank “full-circle” back to its natural state.

In 2008, with help from USDA’s Conservation Reserve Enhancement Program, John planted 1,400 native species of trees and 600 native shrubs that are more than just beautiful — they provide food and habitat for bees, butterflies, and other wildlife.



For each of the last five years, John has planted about 200 more trees and the young trees now total 3,000.

American basswood, persimmon, river birch, serviceberry,

Eastern redbud, black cherry, sugar maple, crab apple, sweetgum, black willow, redosier dogwood, swamp white oak, smooth alder, and bur oak can all be found on a walk through the creekside woods.

He knows which ones grow best and which ones have struggled to survive. Several days each week,



John drives out to the farm from his home in town to check on his trees, and tend to the tubes protecting their tender trunks.

The work is paying off: The stream is noticeably wider just from removing the cows. The young trees keep the soil from eroding. The stream banks look more natural.

John loves to take visitors through his grove of trees and talk about what they mean to him. He spends so much time there, tending them because he thoroughly “enjoys seeing the new growth.”

As they grow, the trees will shade the stream, reducing the water temperature so fish can thrive. John knows he is already providing food sources for birds and helpful insects including those that pollinate food crops. Deer and other animals will also be able to find a home in these woods now and in the future.

“Areas left to grow up on their own, will grow up in junk,” says John. But under his industrious hands and watchful eye, the land will instead return to a beautiful and beneficial forest. “I am passing on, keeping something moving along, which will be appreciated by the next generation,” says John.

THE NEALES TEACH THEIR CHILDREN TO LIVE ON THE LAND



Merritt and Katcha Neale wanted their family to live on a farm so their two sons could learn about raising food, living off the land, hard work and creativity — and become “hearty people.” In 2007, they bought their Aberdeen Mills property, with its buildings dating to 1770 and 40 acres bordering Conewago Creek. “Ultimately, we are striving for authenticity,” say the Neales.

The Neale family is working toward a long-term vision to make their property a place people visit to learn about sustainable agriculture and the historic mill.

They raise animals for their meat and fiber: Jacob sheep for their meat and wool; pigs for their meat; and alpacas for their fiber. They grow vegetables and keep bees, enjoying their honey. They tend chickens for their meat and eggs, and raise goats for their milk and brush control.

Their land includes mature forest and in the late winter the Neales tap sugar maple trees to make maple syrup.

In the six years since they have owned the farm, the Neales have planted a buffer of trees along the creek and a native wildflower meadow.

They've developed a manure management plan, and a forest management plan, funded by the USDA Natural Resources Conservation Service.

Their goats eat the invasive plants that threaten the health of their woods, a creative solution to properly tend the forest and rotationally graze their animals. In time, the invasive plants will be under control and native species can be planted — with no use of herbicides or other chemicals.



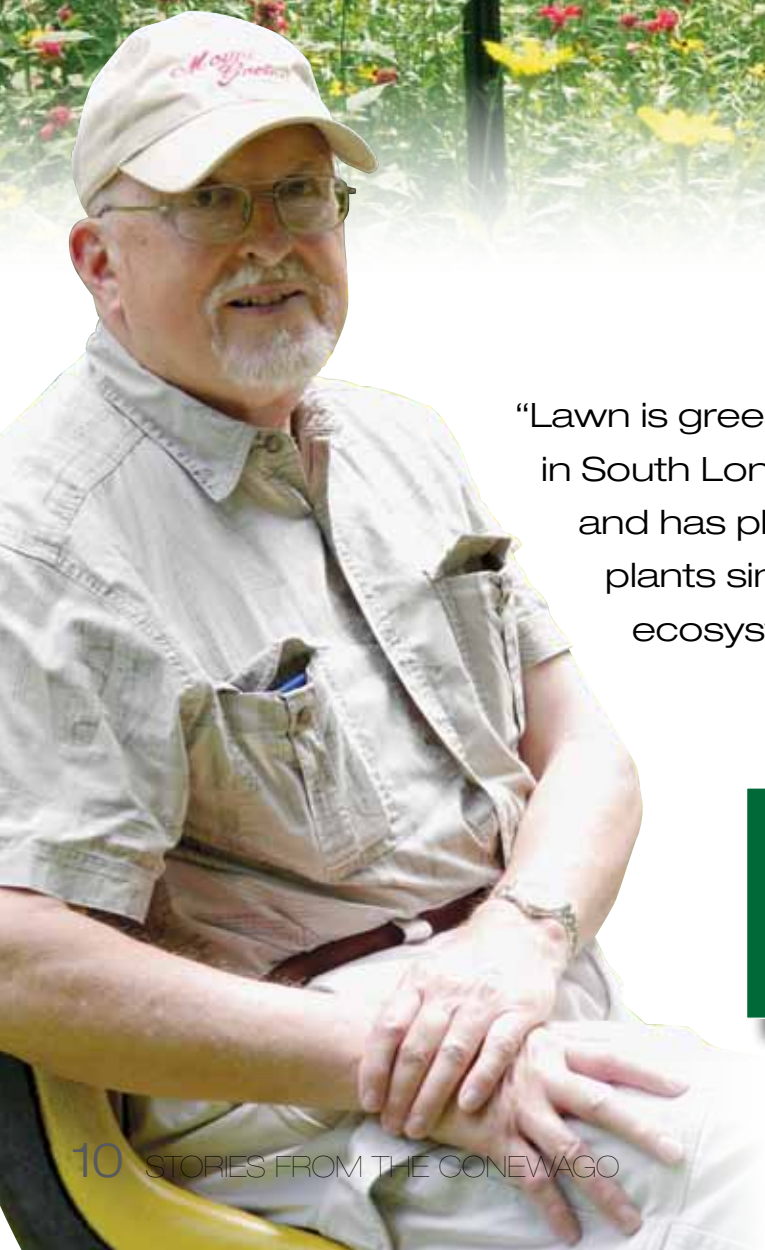
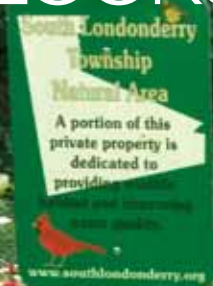
As the plant community shifts from invasive to native species, it will support hundreds of insects and food for other wildlife.

Under the Neales' careful stewardship, their woods will be better habitat for more abundant wildlife. On a broader scale, the woods filter pollutants out of water and keep soil from washing downstream. As they walk through their woods, the Neales can enjoy a healthier forest and take pride in knowing they are doing their part.

Owning this property, they say, is “a big responsibility” — one they feel lucky to have as they raise their children and teach them a lifestyle in balance with the land and water.



DICK BROWN'S MEADOWS ARE BEAUTIFUL FOR MORE THAN THEIR LOOKS



“Lawn is green concrete,” says **Dick Brown**, who lives in South Londonderry Township in Lebanon County and has planted and promoted native species of plants since he learned of their critical role in the ecosystem 30 years ago.

“We need to live with the natural world instead of destroying the natural world. Incorporating native plants helps to enhance the environment where it has previously been disturbed.”

Dick, a retired middle school science teacher, started by adding native species of plants into his own flower beds in place of non-native plants grown only for their ornamental value — or “wallpaper plants,” as Dick calls them. “They look good, but do not have a purpose other than beautification.”

Water can run off the compacted soil of a lawn just as it would run off concrete, Dick has observed. Lawn, while deceptively green, is just as sterile as a parking lot. Very few insects survive, notes Dick, who has only become more dedicated over time.

Those “wallpaper plants” provide little to no food or habitat for wildlife, then often spread to fields and woods where they flourish unchecked and crowd out native species.

Dick has planted more than 40 species of native wildflowers and grasses in his landscape, including a variety of milkweeds, wild bergamot, beebalm, blackeyed Susan, Joe Pye weed, Oxeye sunflowers, great blue lobelia, Indiangrass, cardinal flower, Eastern bottlebrush grass and River oats.



The meadows of native plants grow much deeper than lawn turf, absorbing water and breaking apart the soil. The wildflowers and grasses provide feed and cover for a wide variety of creatures from mammals, birds, reptiles, amphibians, and spiders to a wide variety of insects including butterflies, bees, wasps, and beetles.

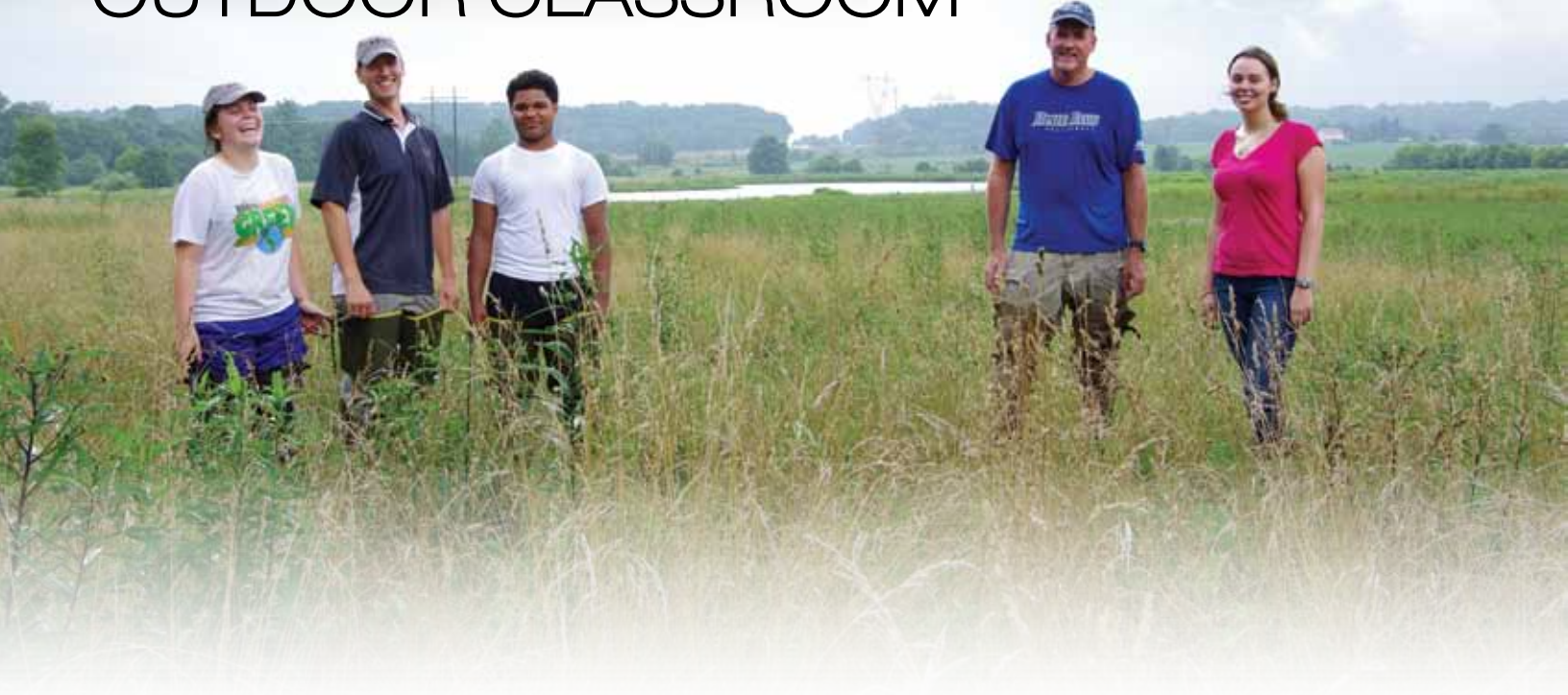
Today, a healthy ecosystem surrounds Dick’s house in the woods and he has become the local expert on how to collect seed, clean seed, plant, and maintain native meadows. He’s guided the planting of more than 50 meadows over the past 10 years.

“We need to live with the natural world instead of destroying the natural world,” says Dick.

“Incorporating native plants helps to enhance the environment where it has previously been disturbed.”



HERSHEY MEADOWS CURBS POLLUTION AND CREATES AN OUTDOOR CLASSROOM



The Hershey Meadows Project prevents huge loads of sediment and nutrient pollution from washing into Conewago Creek during every rainstorm by stabilizing banks and planting trees along a mile of the Conewago Creek, and restoring 13 acres of wetlands. The water is cleaner — and the project has helped to teach the public, elementary students and college students about wetlands and watersheds.

Mud sills, log veins, and bank-full benches are all ways to stop erosion, stabilize a stream bank and keep soil and nutrients on the land and out of the water. The Tri-County Conewago Creek Association did just that on land owned by the Hershey Trust between Routes 283 and 743 that includes a mile of stream.





“The completed mosaic of wetlands, forested buffers, grassy meadows and stabilized stream banks sharply reduces nonpoint source pollutants discharged to Conewago Creek,” says Larry Coble, TCCCA member and self-taught naturalist. “It infiltrates and evaporates rainwater, offers important habitats for wildlife and provides floodplain to hold stormwater during large events.”

Besides providing a wealth of ecological benefits, this site proved an ideal location for learning. During the work, the public could see the project take shape from the Conewago Recreation Trail. Signs at a viewing station just off the trail explain how the project is helping water quality and health of the watershed.

Plus, the area has become a wonderful outdoor classroom for two local schools, teaching students from kindergarten through college about its ecological benefits.



Tom Murray, Elizabethtown College Professor of Biology and Director of the Environmental Science Program, teaches two to four students a year about environmental monitoring techniques such as macroinvertebrate sampling and pebble counts at the site. He particularly likes using this site because Hershey Meadows is in “the heart of the watershed” and is an area that local students previously saw every day from the highway before they understood its value to their local ecosystem.

Milton Hershey School’s Nate McKelvie, an Environmental Educator, also likes taking his elementary, middle and high school students out to this site where he can teach about native plants, wetland delineation, and succession. This site provides a “special opportunity” because it was so recently restored. It helps the students understand how streams and wetlands can “heal” and to see change over time.

The students appreciate the hands-on education because it is easier to understand environmental concepts when you can actually see and touch what you are learning about. “Distractions are educationally beneficial,” say students. “Being outside connects everything we are taught in the classroom.”



CONSERVATION PRACTICES ENHANCE ECOSYSTEM SERVICES

NATIVE MEADOWS:

Open fields dominated by native grasses and wildflowers.

- Erosion control
- Wildlife habitat
- Carbon sequestration
- Food for pollinators
- Groundwater recharge
- Flood mitigation



WETLAND RESTORATION:

Return of a wetland's natural hydrology, vegetation and function.

- Water purification
- Wildlife habitat
- Food for pollinators
- Carbon sequestration
- Groundwater recharge
- Flood mitigation



FOREST MANAGEMENT:

Maintaining and adding to the value of forests for present and future generations.

- Erosion control
- Wildlife habitat
- Food for pollinators
- Carbon sequestration
- Water and air purification
- Temperature regulation
- Groundwater recharge
- Flood mitigation





RIPARIAN BUFFERS:

Vegetated land along streams.

- Erosion control
- Fish and wildlife habitat
- Food for pollinators
- Carbon sequestration
- Water and air purification
- Temperature regulation
- Groundwater recharge
- Flood mitigation

PASTURE MANAGEMENT:

Maintaining strong stands of forage species, minimizing weeds, rotating animals to prevent over-grazing.

- Erosion control
- Food for pollinators
- Carbon sequestration
- Groundwater recharge
- Soil health

CROP MANAGEMENT:

Using methods to minimize erosion and protect soil health, such as no-till, terraces, cover crops, or crop rotation.

- Erosion control
- Soil health
- Food for pollinators
- Carbon sequestration

Ecosystem services are goods and services provided by natural processes that benefit society. Farms and rural lands provide many ecosystem services.

Landowners can adopt **conservation practices** that greatly enhance the ecosystem services provided by their lands. Each of these conservation practices provides the suite of ecosystem services listed.

WHAT ECOSYSTEM SERVICES DOES YOUR FARM PROVIDE?




Your farm provides **ecosystem services**, or benefits like groundwater recharge, flood control and carbon sequestration. Once farmland is developed, most of these benefits are no longer provided.

You can conduct a basic assessment of the level of ecosystem services your farm provides. The level will depend upon both the landscape type and your management practices. As a general rule, the level of ecosystem services increases with the diversity of your landscape and the implementation of conservation practices.

To start, think about your farm in terms of three different landscape types: **croplands**, **pastures**, and **natural areas**.

ASSESSING ECOSYSTEM SERVICES ON YOUR FARM



-  CROPLANDS
-  PASTURES
-  NATURAL AREAS



CROPLANDS

PASTURES

NATURAL AREAS

For each of these landscape types, there are a variety of conservation practices that will increase the health of your farm and the ecosystems services it provides:



Cover Crops



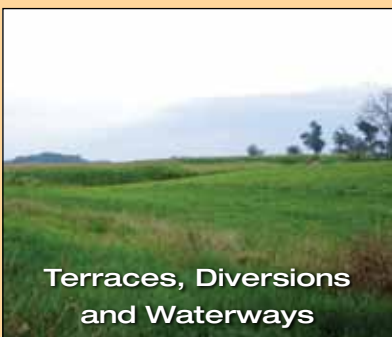
Crop Rotation



Nutrient Management



No Till



Terraces, Diversions
and Waterways



Off Stream Watering



Rotational Grazing



Stabilized Walkways



Stream Bank Fencing



Precision Feeding



Forest Management



Wetland Restoration



Native Meadow
Restoration



Reforestation



Riparian Buffers



Stream Restoration

OPPORTUNITIES FOR INCREASING YOUR LAND'S CONSERVATION VALUE—

for You, Your Neighbors, Your Community and Society

There are many programs that provide **financial resources to help landowners** implement conservation practices or that reward them for doing so. “Payment-for-ecosystem-services” programs include the following types:

Cost Share Programs. These programs provide reimbursement to landowners to help pay for the cost of adopting conservation practices. Examples include Farm Bill programs administered by the USDA Natural Resources Conservation Service (NRCS), including the Environmental Quality Incentives Program (EQIP) and the Conservation Stewardship Program (CSP). Other examples include state and federal grants to improve water quality and habitat, including Pennsylvania's Growing Greener program and the federal Clean Water Act Nonpoint Source Management (Section 319) program.

Land Retirement Programs. These programs pay farmers to implement conservation

practices and “retire” them from production. Examples include the Conservation Reserve Program (CRP) and the Conservation Reserve Enhancement Program (CREP), administered by USDA. CREP is a leading program for funding the restoration of riparian buffers along streams.

Easement Programs. These programs pay landowners to preserve their land in perpetuity, so that it remains farmland and open space forever. Examples include county farmland preservation programs, Growing Greener state grants for land acquisition, and USDA's Agricultural Conservation Easement Program (ACEP).

Environmental Market Opportunities. These programs give “credits” to landowners for the conservation practices they have implemented, allowing landowners to sell the credits on the private market. An example is Pennsylvania's nutrient trading program, which allows farmers to earn and sell nutrient credits for implementing practices that improve water quality.

The following chart contains information about several programs that may be available to help you implement conservation practices on your land to increase its ability to provide ecosystem services. Use the abbreviations and the key to find the full name of the program and a website contact.

CONSERVATION PRACTICE	PROGRAM	PAYMENT TYPE	CONTACTS
CROPLANDS			
Crop rotation	EQIP, CSP	Cost share	NRCS
Terraces, diversions, waterways	Section 319	Cost share	CCDs
No-till			
Cover crops			
PASTURES			
Streambank fencing	EQIP	Cost share	NRCS
Off-stream watering	Section 319	Cost share	CCDs
Stabilized walkways	CREP	Land retirement	FSA
Rotational grazing	EQIP, CSP	Cost share	NRCS
Precision feeding	Section 319	Cost share	CCDs
NATURAL AREAS			
Riparian buffers	CREP EQIP, CSP	Land retirement Cost share	FSA NRCS
Forest management	EQIP, CSP	Cost share	NRCS
Native meadow restoration			
Reforestation			
Wildlife habitat restoration			
Wetland restoration	ACEP Section 319 Growing Greener	Easement Cost share Cost share	NRCS CCDs CCDs
Stream restoration	Section 319 Growing Greener EQIP	Cost share Cost share Cost share	CCDs CCDs NRCS
WHOLE FARM			
Farmland preservation	Farmland Preservation Growing Greener	Easement Easement	PDA Land trusts
Nutrient trading	Nutrient Trading	Environmental markets	DEP

KEY

ACEP: Agricultural Conservation Easement Program
<http://nrqs.usda.gov>

CCDs: County Conservation Districts
 Visit the PA Association of Conservation Districts website, <http://www.pacd.org>, to find your district.

CREP: Conservation Reserve Enhancement Program
<http://www.creppa.org>

CSP: Conservation Stewardship Program <http://www.nrcs.usda.gov/wps/portal/nrcs/main/pa/programs/financial/csp/>

DEP: Pa. Department of Environmental Protection
http://www.depweb.state.pa.us/portal/server.pt/community/dep_home/5968

EQIP: Environmental Quality Incentives Program
<http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/eqip/>

FSA: USDA Farm Service Agency
<http://www.fsa.usda.gov>

Growing Greener: PA Growing Greener Environmental Grants Program
http://www.depweb.state.pa.us/growing_greener

Land trusts: Organizations that help landowners preserve their lands
 Visit the PA Land Trust Association website, <http://www.conserveland.org>, to find land trusts near you.

NRCS: USDA Natural Resources Conservation Service
<http://www.nrcs.usda.gov/wps/portal/nrcs/site/pa/home/>

Nutrient Trading: Pa. Nutrient Trading Program
http://www.portal.state.pa.us/portal/server.pt/community/nutrient_trading/21451

PDA: Pa. Department of Agriculture http://www.agriculture.state.pa.us/portal/server.pt/community/pennsylvania_department_of_agriculture/10297

Section 319: Nonpoint Source Management Section 319 Program
http://www.depweb.state.pa.us/portal/server.pt/community/bureau_of_conservation_and_restoration/10593



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For more information
about the Conewago Creek Initiative,
visit www.conewagoinitiative.net

