

Lebanon Youth

(Continued from Page A23)

looking" stream banks.

Historically, when natural areas were dominant, removing "nature" provided a "safe" area for humans.

Also, there has been a past use of strict engineering solutions to local stream flooding problems — channeling and diking.

However, it resulted in increased flood damage downstream, and more extreme dryness of flood plains, wetlands and uplands during drought.

After more than 200 years of agricultural production and heavy industry, many of the streams in the southeastern region of the state (that includes Lebanon County), have had their slopes and courses altered dramatically to accommodate farming, as well as industry, transportation, storm water runoff, and other land uses.

In more recent times, as streams began to recover from the effects of many mill dams, canal dams, and bank changes, some post-1950s real estate developers have removed vast expanses of riparian forests along stream banks and even more recently have altered many of the upland headwaters of tributaries.

Tributary health and integrity are the most important insurances to continued health of a main watercourse.

For Lebanon County, the main stream in its valley is the Swatara Creek, and the Quittapahilla Creek is its largest tributary.

The stream had been sorely polluted for years, mainly from industrial toxins and wastes. It was also rendered biologically impaired by uncontrolled Lebanon City storm water runoff (which continues).

Up until recently, most of the tributary streams had good to excellent water quality, and many supported at least marginal populations of wild trout, and a wide variety of fishes.

Because of the loss of heavy industry in Lebanon City, as well as improved community waste water treatment, the Quittapahilla Creek water quality has improved dramatically in the past 20 years.

In the meantime, almost every one of its tributaries has had its quality reduced somewhat significantly, though not necessarily permanently.

There has been a long history of ignored knowledge about the benefits to a stream and its water quality by ensuring adequate stream-bank planting and retaining adequate

ate headwater sources such as wetlands and upland zones.

Streambank planting can provide shade, help retain and improve streambank integrity, and provide habitat and food for various organisms, many of which have life-cycles that include part of their life in water, and the other part in the riparian zone.

While political forces are building behind the concept that the main problem with water quality in the Chesapeake Bay is because farms are dumping excessive amounts of nutrients into water courses, another more scientifically sound concept, if not more complete, is that other activities that cause historically excessive flooding and drying have destroyed much of the nutrient-using abilities of streams, the Susquehanna River and the Chesapeake.

While there is no question that some agricultural operations are such that nutrients flowing off the farm are stressing stretches of streams, what is beginning to grow in acceptance is the acknowledgement that the destruction of aquatic habitat has significantly reduced the amount of life along and in watercourses that naturally consume and filter nutrients.

Some suggest that, should the ship-ballast water-introduced zebra mussel become established throughout the Susquehanna and the brackish areas of the Chesapeake, the nutrient problem would be solved, but an environmental nightmare begun.

The mussel is in the upper Susquehanna River. There are no controls.

A healthy aquatic community, which includes its upland areas and lower elevation streambanks, can be assumed to assimilate a fairly large volume of nutrients compared to a stream that, except for the name, has been reduced to a drainage ditch.

Beck Creek, albeit small in comparison to many streams, and short in total length, can be expected to receive many benefits from the tree planting.

Increased shade can help preserve stream temperatures and prevent deadly summer extremes.

Though few sources cite specifics of the interdependency and interrelationships between land and water environs, and the plants and animals along a stream, they are evident.

Aquatic insects such as mayflies and caddis flies require streamside vegetation in order to successfully complete their life cycle.

A mayfly egg is laid in water, and the young generally spend a year in the stream, feeding on various plant and/or bacterial and fungal materials.

After maturing to a certain stage, the immature mayfly comes to the surface of the water where it emerges into a flying insect.

If it survives being eaten by fish, or birds or frogs or some other predator, the flying mayfly then requires streamside trees and shrubs on which to land and hide, for it has one more stage to get to before it can reproduce.

The flying mayfly changes one more time into a reproductive stage. It changes while clinging to a streamside plant, usually hidden under a leaf or under a small stem or twig. Then, after drying off and the right time arrives (usually all within a day), it flies out to the middle of a stream where it may or may not meet a mate.

Many are eaten by birds, bats and fish as they try to lay enough eggs back into the stream to sustain the population for one more year. (Many times they seem to fly slightly upstream to lay eggs. Since eggs wash downstream with the water before clinging onto something in the streambed, some consider this is a way for some mayflies to keep repopulating the same stretch of stream.)

This is the wonder of a healthy stream. It makes sense.

Should a heavy load of manure overtake a stream once, it can injure it, though the effects generally are temporary.

If the trees are all cut from the stream bank, and the bed straightened, and if the banks are grazed down or turned into a lawn, the effects are more permanent than the humans who do it.

It can no longer assimilate the nutrient load it gets, much less additional accidental spills. What doesn't get used, gets passed on downstream, or buried in the sediment.

In another example of the interdependency, deciduous forest streams — as Beck Creek can be assumed to be in its natural state — benefit during the winter and early spring from the lack of leaves.

Sunlight during winter is short duration and at a much lower angle than during summer. The light allowed to penetrate into the stream helps provide energy for

plants such as algae to use the nutrients deposited from leaf fall and from usual late fall and spring storm water.

Those algae are then food for bacteria, insects and young post-hatching fish, which are food for larger insects, fish, birds and animals, etc.

Those algae, and other life forms that used the nutrients and sunlight to grow, tie up nutrients into the food chain of that stream.

Even algae that aren't consumed can remain in the food chain. Some get washed onto a flood plain during high water and can attach to tree bark or other plant structure along the plain, and the nutrients tied up in it consequently can be used again locally, not in the Bay.

Later in the year, after leaves appear, the sunlight is filtered, the air around the stream is protected and humidity preserved, and water temperatures are more stabilized, and can be maintained closer to the ground water temperature of 52 to 53 degrees.

Trout, for example, die if water temperatures get into the mid to high 70s. They are not the only species intolerant of extreme temperatures.

If the leaves do not appear, the continued sunlight during summer can easily drive water temperatures close to air temperatures — in the 80s to 90s.

This is especially so in heavily grazed pastures with unprotected banks.

Without the trees and shrubs, a stream can quickly become shallow and wide, and very quickly summer water temperatures can shoot above tolerable levels for the aquatic life.

All it takes is one day out of the year for water temperatures to be driven high enough to kill most existing stream life.

The result is an almost sterile stream.

For species, such as trout, without restocking, it could mean the permanent loss of the species to that stream, all because of one day of high water temperatures, which is all because there were no trees or shrubs, all because the trees and shrubs were cut down for whatever reason.

Biologists use the term "biomass" to describe the amount of organic, generally living material, in an environmental system.

A system with little relative biomass is generally considered hostile to life, while one that has comparatively large amounts of biomass is considered healthy for life.

Just as people describe the beauty of a rain forest in terms of its diversity and bulk of life forms from top of forest to bottom, a healthy stream has the same attributes.

The trees the youth planted were not raised specifically for streamside planting, though some species were well suited.

All species should grow well and provide beauty and benefits to the stream, according to Paul Troutman.

The tree types included were sweet gum, red oak, white oak, silver maple, red maple, green ash and river birch.

As the shrubs included hollies, dogwoods, chokeberry and arrowwood.

According to Wolfgang, in addition to the tree species made available from DCNR, were a few leftovers from the district tree sale, particularly hybrid poplar, white pine and Norway spruce.

Wolfgang said the project was made possible through a Chesapeake Bay mini-education grant of \$750 (the maximum allowed), which was used to purchase the 500 "white stick" tree shelters.

He said Farmer Boy Ag of Myerstown also was essential to its success, providing 500 stakes to support the shelters and seedlings.

Though the Lebanon Conservation District is done for the year with streamside planting, there are plans being developed now for projects next year.

Those landowners and teachers interested in participating in next year's projects should call Wolfgang at (717) 272-3908.

For those concerned about the plastic shelters, district employees will remove them and monitor them. The landowner is primarily responsible for maintenance of the stream bank plantings thereafter.



For Installed
STANDING SEAM ROOFING
contact
STRICKLER METAL ROOFING
717-865-3093
or 610-488-9303

Specializing in double crimp standing seam
Available in
prefinished in 20 + Colors
Galvalume - Galvanized - Tern - Etc.
FREE ESTIMATES
Work Approx. 80 Mile Radius of Lebanon, Pa.
595 E. Rehrersburg Rd., Bethel, PA 19507

MARTIN'S TIRE & ALIGNMENT

We're Your Firestone Farm Tire Dealer!

Count on us year-round for:

- A complete line of Firestone farm tires
- In the field emergency repair service
- Implement and light truck tires in stock too!

Call For Prices

Firestone All Traction 23°

18.4R34	1 ★	\$550.00
20.8R38	1 ★	\$730.00
20.8R38	2 ★	\$885.00
20.8R42	2 ★	\$890.00



Visit or call us today!
MARTIN'S TIRE & ALIGNMENT
Located in Churchtown
119 Water St., Narvon, PA 17555
717-445-4993

Firestone
FARM TIRES
THE LEADER IN THE FIELD