



The GOOD of WOOD

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Larger woody debris creates variability in habitat types and can make the best trout habitat in a stream. It cannot be easily duplicated with traditional artificial structures. With this in mind, PFBC's Habitat staff is trying a new approach by actively adding large, woody debris to appropriate stream reaches to try to duplicate naturally occurring log jams.

An old letter to the editor taken from a northcentral Pennsylvania newspaper still hangs on our office wall in the Division of Habitat Management. "Wake up Fish Commission," it exclaims, as it demands that we grab our chain saws and clear all the woody debris from a Sproul State Forest trout stream to help "keep PA trout fishing the best." It goes on to ask if anyone ever hears the Pennsylvania Fish & Boat Commission (PFBC) "talk about stream improvement and trout habitat," rather than "license increases." We keep the letter on the wall to get an occasional chuckle, because we have been involved with extensive habitat work in this area in the past and that woody debris (anything from logs and branches to fine brush) in the stream channel provides some of the best aquatic habitat.

The human eye likes to see things nice and neat—the grass mowed to just the right height, the bushes trimmed nicely and the leaves raked out of sight. However, the eye of the rabbit, songbird and even the trout like things messy and the messier the better. A colleague of ours, who works as a Wildlife Biologist with the Pennsylvania Game Commission, likes to say, "Good wildlife habitat ain't pretty." This is absolutely true, whether you have fur, feathers or

fins. In the Habitat Management Division, we have spent our careers at PFBC designing and implementing fish habitat improvement projects. The log and stone habitat devices we have developed over the years are often meant to imitate habitat that occurs naturally in streams. But, no matter how well we do, Mother Nature almost always does a better job.

To this day, it is often considered an acceptable practice to keep stream channels "clean" by cutting brush from the stream banks and removing larger woody debris from the channel. Although these efforts may be pleasing to the human eye, they usually prove detrimental to the aquatic environment.



photo-Tyler Némond

A stream is shown before large, woody debris is added. This stream is approximately 85 feet wide.

Stream bank vegetation provides terrestrial and aquatic habitat along with bank stability. In addition, large, woody debris and other vegetative matter such as leaves and twigs, which enter the stream channel, are an important and necessary component of the aquatic ecosystem. This material serves as a source of nutrients for aquatic plant and algae growth, and serves as both a primary food source and habitat for many organisms on the lower end of the food chain. Vegetative material serves as a storehouse of the sun's energy, which can be passed up the food chain. As soon as it hits the water, it is under attack by a host of organisms, which begin to break up and consume it. These aquatic critters, known as macroinvertebrates, have been classified with scary sounding names like collectors, shredders and scrapers, depending on how they feed and what they eat. Examples include insects such as mayflies, caddisflies and stoneflies. Collectors feed on algae, bacteria, feces and plant material. They physically gather food or construct net-like structures to catch food. Shredders use chewing mouthparts designed to shred, cut, bite or bore and feed mainly on plant material. Scrapers use razor-like mouthparts to scrape and eat algae growing on rocks and wood. Trout and other fish species readily eat all of these organisms.

While large, woody debris provides many benefits to the stream ecosystem, some debris jams may increase erosion or endanger roadways, bridges or personal property. In these cases, it may be necessary to remove part or all of the jam to alleviate the problem, ultimately removing or altering only what is necessary. In more wilderness areas, it can be argued that large woody debris should be allowed to accumulate as a part of the natural processes that work together to continually shape and change a stream channel. Good wild trout habitat in this form may not always be pretty or easily fished, but it is a vital component of the stream ecosystem.

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photo-Tyler Némond

A 30-foot section of spruce tree is moved across the channel.

mind, PFBC's Habitat staff is trying a new approach by actively adding large, woody debris to appropriate stream reaches to try to duplicate naturally occurring log jams. We are creating brush deflectors that consist of a few key pieces of large, woody debris that partially span the stream channel. These key pieces will serve as "debris catchers" that, through time, will collect natural floating debris and will eventually build a complex log jam. The log jam will physically narrow the stream channel, creating a deeper and faster run along the outer edge of the structure. This "messy" structure will not only provide habitat for the macroinvertebrates discussed above, but it will also provide refuge for juvenile fish as well as overhead cover for all life stages of fish.

So, to the author of the letter on our office wall, as resource managers and habitat designers, we will do our part to keep Pennsylvania's trout fishing the best by setting aside the chain saw and allowing Mother Nature do what she does best when it comes to woody debris in the stream channel. And if that isn't enough, we will add our own. ☐



photo-Tyler Némond

This is the same stream after additions to the right stream bank.