



Problematic culverts on the Carp River.



The same crossing with a bridge.

In 2006, the Conservation Resource Alliance of Traverse City replaced a pair of round metal pipe culverts crossing the Carp River in Emmet County with an attractive Michigan-made timber bridge. A watershed assessment had identified the culvert crossing as the greatest single negative impact to water quality and fish habitat on the River. The culverts were causing erosion and sedimentation, high flow velocity (impacting fish migration and spawning success), and altering the stream bed upstream

and downstream. Replacing the culverts with a bridge reduced the sand sediment loading to the River by an estimated 10 tons per year! In addition, it reduced flooding potential and road maintenance costs. This stream was also habitat for an endangered species of aquatic beetle, which undoubtedly benefitted from the project. Visit the CRA's website for more information about their Rivercare and Wildlink programs (www.rivercare.org)

The Trouble with Culverts

A culvert is a structure used to convey water from one area to another. Most roads or driveways use culverts to cross streams, ditches, or wet areas. The most common type is a corrugated round metal pipe culvert. Other types include box, cylindrical, or bottomless culverts. They can also be made of concrete, plastic, or even wood. Without proper design, sizing, and placement, culverts can degrade stream habitats and water quality. Some guidelines to follow when installing or replacing a culvert include:

- Use a size big enough to handle the largest expected flow events
- Install them during an optimal time of the year (low stream flow, during the growing season, and avoiding fish spawning runs)
- Position them so they match the natural elevation, slope, and angle of the stream bed
- Use culverts that are long enough so that a gradual, stable road-bed side-slope can be established

- Grade the road bed so that runoff flows off the road before reaching the culvert (and the stream)
- Use an anti-seep collar to prevent undercutting
- Seed and mulch disturbed soils and use other standard erosion control techniques during installation
- Permits are needed for installing culvert crossings on streams and across most wetlands
- Alternatively, consider using a bottomless arched culvert or a free-span bridge crossing for larger streams (bridges are the best structure for crossing streams to minimize environmental impacts)

A great reference on this topic available on-line is a booklet titled *Great Lakes Better Backroads: Clean Water by Design* by Huron Pines of Grayling, Michigan (<http://www.huronpines.org>).

On-the-ground easement monitoring will be conducted at unspecified times between April 18th and October 28th, 2011.

Stew Crew 2011



Charles Dawley



Doug Fuller



Cindy Mom



Jay Neff

Please call us, if...

...you are selling your easement-protected property. This will ensure the new owners understand the easement.

...you plan to exercise one of the rights retained in your conservation easement.

...As always, please feel free to contact LTC Stewardship staff for advice or information about your resource protection and management needs.

Conservation Easement Landowner Newsletter

A newsletter for owners of land protected with a conservation easement.



Spring 2011

CONSERVATION EASEMENT LANDOWNER PROFILE Protecting Waterways on Your Land

Thoughts from landowners who are working to protect their creeks and streams.



Wagoner Conservation Easement

Wendy Wagoner

Last year, a conservation easement protected Wendy Wagoner's 20 acres with 1,300 feet of frontage on Pearson Creek. Wendy's land is directly connected to Lake Huron's Les Cheneaux Channel via her stream. Wendy was motivated to protect her land because she came to understand how it is connected to all the other land around her by the creek. Now, when Wendy walks along Pearson Creek, she takes care to stay far enough away from the water to prevent bank trampling and erosion.

Wendy will tell you that 15 years ago, she did not know that some of the plants she was growing as part of her wild and medicinal herb business just outside of Cedarville were invasive species. These include common herbs such as oregano, mugwort, mints, stinging nettles, and coltsfoot. But, she has learned a lot since then, and today Wendy coordinates the Chippewa/East Mackinac Conservation District's Cooperative Weed Management Program. "We try to teach landowners and farmers how the seeds of plants can be dispersed by wind or animals, or even carried downstream by flowing water," she said. "I hope we can get people to understand that the 'newest' plant they are buying could be the 'new invader' on the native landscape."

"There is State land across the street including a parcel that was recently protected through the Conservancy and the State," she said. "I think if we, as landowners, help spread the word we can get more of us to piece together our lands to make larger blocks of protected lands and achieve better watershed protection."

Jeannine Palms and Dale Petty

When Jeannine Palms and Dale Petty purchased 40 acres in Chippewa County, several logging roads had been constructed, the forest had been recently heavily logged, and unauthorized ORV use was occurring. Their main goal was to return the land to its natural state.

"There is an unnamed creek running through the land that we now call Beaver Creek," Jeannine said. "It flows into the interdunal swales just inland from the Lake Superior shoreline. Along the shore, you can see it seeping towards the lake. We were most interested in seeing the creek return to its natural state unimpeded by a logging road crossing which put the creek flow through a culvert. When the beavers came in, they started the work for us."

The beavers built a dam at the entrance to the culvert, creating a flooding that inundated the road. However, before the dam and culvert could be removed carefully with a slow draw down of the water in the pond, the stream formed a short new channel off to the side. Jeannine and Dale also noticed that rainwater, collecting on the logging road as it approached the creek crossing, was creating erosion channels. Not wanting more silt flowing into the creek from this erosion, they followed the advice of an erosion control expert. They used readily available small dead trees to create "waterbars" in order to slow the runoff and divert it into the grassy swales along the sides. Through signage and hand-created barricades, they were also able to eliminate the unauthorized ORV access which then allowed the natural vegetation to reestablish itself in the roadway. The new stream channel is now stabilizing nicely, the logging road is disappearing, and beautiful native vegetation is returning, to the delight of Jeannine and Dale.

Whenever they visit their property, Jeannine and Dale – and any friends who are with them – take time to pull exotic species. "We are clearing out marsh thistle from the easement because it impacts the waterway. It grows around the little pond just upstream from the beaver dam and is very hard to control because animals pick it up on their fur. Thistles are all along the waterway," Jeannine said.

In addition to their easement property, Jeannine donated funds for the Conservancy to purchase the adjacent Palms Preserve. Jeannine explains that through Michigan's Landowner Incentive Program, 22,000 white pine and red oak seedlings were planted on the preserve. "Planting native trees is a great way to improve the stability of the soil and protect the stream," she explained. "In the case of this land, it had been so greatly logged, the native trees would not have been able to reestablish on their own."

See inside for "before" and "after" photos from the Palms/Petty easement land.



Logging road and new beaver flooding on the Palms/Petty easement in 2004.



The same stream channel in 2010.

A biotechnical erosion control project utilizing light flexible armoring and vegetation plantings controlled erosion on the Pigeon River. The project was designed and installed by Tip of the Mitt Watershed Council.



DOWN BY THE RIVERSIDE: Understanding and Caring for the Stream on your Conservation Easement Property

MICHIGAN'S WATER RESOURCES REGULATIONS DEFINE A STREAM as a body of water that has definite banks, a bed, and visible evidence of a continued flow or continued occurrence of water. Based on this definition, Michigan has an astounding 36,000 miles of streams! They range in size from some of the largest rivers in North America (e.g. the Detroit River) to tiny trickles that do not even flow year-around. No one in Michigan is ever very far from a stream.

Streams are important natural resources and cultural icons. They are the main source of water for most lakes; create important habitat for fish, aquatic organisms, water-dependant reptiles, amphibians, birds, and mammals; have been aesthetically valued throughout history in famous paintings, photographs, and songs; and were historically vital for transportation, commerce, water supply, and energy (unfortunately, often to the stream's detriment). The presence of a stream almost always enhances a property's value.

Most major watersheds are composed of a long network of rivers, streams, and small intermittent drainages. All of the many features and conditions in the watershed, including geology, hydrology, climate, soils, topography, vegetation, and (perhaps most importantly) human land use and activities influence stream characteristics. The relationship between stream ecosystems, water quality, watersheds, and human activities is inseparable.

An area of variable width surrounding the stream, often consisting of a low, flat floodplain or a conifer swamp, is very important in terms of providing a protective buffer for the stream. This area is termed the stream corridor, and moderates flow, stores water, stabilizes banks, shades waters, provides food and nutrients, filters pollutants, and provides habitat and travel corridors for a variety of other wildlife. A stream is most influenced by activities within the stream corridor, and easily degraded by human activities.

If you have a stream on your easement property, strict adherence to the provisions of your easement is the most basic thing you can do to protect the stream, the wildlife that depends on it, and the water quality of downstream areas. Almost all easements prohibit "alteration of natural water courses, lakes, wetlands or other bodies of water." Some easements further restrict activities in, across, or along a stream, such as bridges, vegetation cutting, and water withdrawal.

Besides abstaining from physically altering stream courses, there may be other actions that you can take to further protect your stream from degradation or even restore it to some extent, such as:

- abstain from using fertilizers, pesticides, and herbicides
- locate septic systems as far back from the streambank as possible
- prevent livestock from accessing the stream by fencing, etc.
- remove dams
- preserve or augment in-stream woody debris (conversely monitor for massive log jams and strategically remove or manipulate them)
- establish a wide (up to 300') buffer zone in a natural condition
- plant or otherwise encourage suitable native vegetation
- prevent runoff and overland erosion
- protect streambanks from erosion
- design and install fish habitat improvement structures.

Before attempting any stream protection or restoration, it is wise to consult with a stream ecologist, fisheries biologist, or other natural resource professional to assess problems and prescribe appropriate management actions. Also, in addition to what your easement prohibits or allows, please be aware that State and possibly local water resource regulations require a permit for things like:

- dredging
- filling
- construction below the ordinary high water mark
- interfering with natural stream flow
- connecting a ditch or canal to a stream
- earth change within 500 feet of a stream
- dam removal (including beaver dams higher than six feet)

Understanding Beavers

WITH A DECLINE IN THE POPULARITY OF FUR, THE ABSENCE of large carnivores, and changes in forest habitats due to logging, beavers have become quite abundant in places. While some landowners enjoy watching beavers work on their land, others find that the result is unwanted flooding and dead trees.

The beaver (*Castor canadensis*) is the largest rodent in North America and can weigh up to 60 pounds. Beavers are strictly vegetarian with a diet consisting of aspen, willow, alder, poplar and birch bark, as well as sedges, grasses, and other soft herbaceous plants. Typical litter size is two to four "kits" that stay with the family

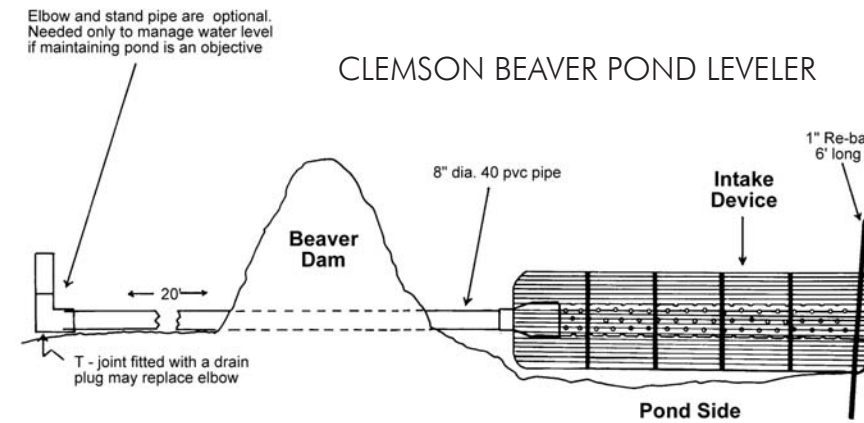
big enough, homes and other structures can even be endangered. In Michigan, beaver dams are blamed for warming water and degrading trout habitat.

A beaver dam and the resulting pond can have some positive environmental effects as well. Beaver ponds help retain and store flood waters, silt, suspended solids, and nutrients that would normally flow downstream and degrade stream quality. They can also enhance waterfowl habitat, promote the growth of plants like willow and alder, and provide for recreational opportunities.

One solution for problem beavers is to remove the dam. This is often ineffective as the beavers simply rebuild the dam, sometime within hours. When removing a dam, be sure to do it slowly, ideally over several days to prevent downstream flooding, erosion, and the release of silt and warm water with subsequent habitat destruction. State permits are required to remove any dam more than six feet high.

Another solution is to trap the beaver. Beaver trapping requires a license, or, if outside the beaver trapping season, a special permit. Private wildlife control consultants are available in most areas to trap problem beavers for a fee.

Another option is to install a water flow mitigation structure. These devices convey water beneath the beaver dam. Because the beaver cannot see or hear the flow of water and the water flows through many



for several years before branching out to establish new territory (typically 5 to 10 miles away, but sometimes as far as 100 miles).

Beavers have a reputation of being very industrious. Their incisors are always growing, and so they are continuously gnawing to keep them short. Dam building is an instinctual reaction to the sight or sound of running water. The purpose of the dam is to engineer a pond habitat that is deep enough to avoid freezing to the bottom in the winter, providing a safe place to live, store food, and raise a family. This is where the beaver typically comes at odds with the human world.

Beavers sometimes choose a road culvert as the perfect place to build a dam. The road bed is already a partly-established dam, so all the beaver has to do is plug the small culvert hole to create an instant pond! With the culvert plugged, the road surface becomes flooded. With heavy runoff, the roadway can be washed away. Trees are usually killed, both by the beavers cutting them for food and when roots are inundated by the floodwaters. If the pond is

small inlet holes located away from the dam, the beavers generally can't figure out how to plug the structure. There are many design variations, including the Clemson Pond Leveler best suited for a traditional dam and pond (see left); and the Lisle Beaver Deceiver, best suited for use at road culverts.

On-Line resources about streams and stream management

Ohio Stream Management Guide <http://www.dnr.state.oh.us>

Stream Corridor Restoration: Principles, Processes, and Practices <http://www.nrcs.usda.gov>

Understanding, Living With, and Controlling Shoreline Erosion: A Guidebook for Shoreline Property Owners <http://www.watershedcouncil.org>

Riparian Zone Management and Trout Streams: 21st Century and Beyond <http://www.michigan.gov>
Managing Woodlands for Wisconsin's Trout Streams.

<http://dnr.wi.gov/forestry/publications/pdf/FR-386.pdf>

Recommendations for improving riparian amphibian and reptile habitat <http://www.rivercare.org/uploads/CRA%20Reptile%20and%20Amphibian%20Habitat%20Suggestions%281%29.pdf>

Conservation Easements by County as of March 2011

	# Easements	Acres
Charlevoix County	66	3306
Cheboygan County	50	7095
Chippewa County	17	4284
Emmet County	105	4158
Mackinaw County	17	774
TOTAL	255	19617