Stream Monitoring on the Norman Borlaug Farm

Mike Natvig, Protivin

The pasture with Borlaug Farm barn in backround

How does a person determine whether a stream ecosystem on their land is healthy, and how can you recognize the impacts your farming practices have on a stream's natural processes? Those were questions I had a couple of years ago, as a circumstance arose on the boyhood home farm of Nobel Peace Prize recipient Norman Borlaug. That farm had 25 acres of stream pasture that had been continuously grazed until 1987 by a previous renter's beef cow herd. The pasture then was not grazed until I had the opportunity to graze my beef cow herd there in the summer of 1997.

The farm, which adjoins mine, is now owned by the Iowa Natural Heritage Foundation. I have rented parts of it from them for several years. Kyle Swanson, their land stewardship director, has been very knowledgeable and helpful, working with me on a long-range land use plan while keeping my goals in mind. The cropland that had been in continuous row crops for many years is being planted to either native grasses and forbs or to a grass-based crop rotation using organic practices.

This streambank shows signs of erosion. There has been no grazing in ten years.

Prior to grazing the field, I wanted to collect a baseline of information so I could tell if grazing had any negative or beneficial impacts on stream health. Just as I was asking myself "How do I collect that information?" the Land Stewardship Project in Minnesota asked me if I would evaluate their new guide to on-farm monitoring, the Monitoring Toolbox. The guide has chapters on monitoring quality of life, finances, birds, frogs and toads, soil, and streams.

The section on streams clearly and simply describes ways to collect baseline stream data. One of the first things I did was to collect samples of the stream bottom organisms. The organisms collected are classed in groups according to how pollution-tolerant they are. For example, group 1 consists of pollution-sensitive organisms found only in good quality water (stonefly and caddisfly larvae are two). Group 2 organisms are found in good-to-fair quality water (crayfish, clams, damselfly and dragonfly larvae, for instance). Group 3 organisms can be found in any quality of water (leeches, snails and aquatic worms are examples).

I found examples of all three groups in the stream. Having this range of types indicates good stream health. I marked all sample areas and took photos for later reference. Monitoring will also include measuring streambank angle, percent of exposed soil, and stream width-to-depth ratio.

In the pasture, areas of native grasses and forbs were burned in the spring to stimulate growth and reduce competition. I will manage the pasture for native vegetation. This pasture includes fens, areas of wet, peat-like soil that support rare plants like the fringed gentian. I fenced the fens to prevent grazing. Other areas were fenced to protect the nests of grassland birds and build up grass fuel to be burned next spring.

I believe grazing management needs to be at a higher level in this kind of pasture. The cow herd should be regulated day-to-day according to what you see taking place on the land and in the water. A balance needs to be found between continuous overgrazing, which leads to stream degradation, and no grazing at all. Total lack of grazing can lead to exposed and collapsing streambanks or excess tree and brush growth with little understory vegetation to protect exposed soil.

A stream is only as healthy as the watershed that it is in. Farming and forestry practices upstream affect its overall health, but when the stream passes through our farms, we are responsible for the continuing stewardship of this vital element, clean water.