Natural Channel Design for Redside Dace

Shari Faulkenham[1],
Mark Wojda[2],
John Parish[3]

[1,2,3] *PARISH Aquatic Services (a division of Matrix Solutions Inc.), Mississauga, Ontario, Canada*

With the populations of the *endangered* Redside Dace (*Clinostomus elongatus*) at risk in Greater Toronto Area streams, there has been a much greater influence on channel design and specific treatments that would benefit the species. Redside Dace are highly susceptible to thermal changes as well as changes in TSS concentrations. We have been fortunate in assisting MNRF in understanding the habitat preferences of Redside Dace. As little as five years ago, simply incorporating some of these habitat preferences into channel designs (namely substrate, pool depth and riparian vegetation) would have been sufficient. Recently though, the design expectations have been evolving. There are numerous additional design features that including pavement, sub-pavement and surface veneer bed treatments that not only provide grade control and vertical stability for the channel, they also match existing substrate sizes as well as Redside Dace sediment size preferences. Recently, pool depths have also been increased, with added emphasis on adjusting channel processes to maintain the pool depth. Culvert treatments have evolved from a blanket treatment of river stone to a clay-cobble mixture that is more natural and functional. The other recent design advance has been the more complicated and varied use of woody material as part of a bank treatment. These features provide additional cover and feeding opportunities.

The presentation will review these various design treatment advances, including technical design details. The research will also present performance monitoring results from two locations from the West Humber River where several of these treatments have been built and have been assessed over the last few years.