

# **Review of Redside Dace Habitat Corridor Realignments: Morphology, Sedimentology and Habitat Suitability within Aged Natural Corridor Designs**

**Paul V. Villard<sup>1</sup>,  
Mark Heaton<sup>2</sup>,  
Emily Rick<sup>3</sup>.**

<sup>1</sup>*GEO Morphix Ltd., Milton, Ontario, Canada*

<sup>2</sup>*Ontario Ministry of Natural Resources and Forestry, Aurora, Ontario, Canada*

<sup>3</sup>*GEO Morphix Ltd., Milton, Ontario, Canada*

Habitat protection for endangered species such as Redside Dace is relatively recent in the context of corridor realignments that have occurred over the last 20 years in Southern Ontario. When restoring Redside Dace habitat within ESA legislation, there are often requirements to provide a range of habitat types which may not be suitable to the scale of the watercourse or its relative position within the watershed. Several large scale realignments have been implemented within the City of Brampton over the last decade that provide a baseline for studying designs that are intended to benefit Redside Dace habitat. Several channels also exist that were historically realigned before the legislation but were still developed to provide habitat benefits for species such as Redside Dace. This range of corridor and channel realignments provides us with habitat designs that encompass many restoration approaches and provide an opportunity to evaluate the effectiveness of habitat design components.

It is possible to review previously constructed channels with regards to morphology, sedimentology, hydraulic and biotic attributes to assess their suitability for the habitat of Redside Dace and co-existing species. To rapidly evaluate these corridor designs, a sub-reach sketch map technique was developed to inventory the habitat elements as well as map out the sedimentology and morphological conditions within the watercourses. This technique uses aerial photographs or original design drawings to facilitate the sketch mapping process and to create inventories of the habitat elements that were installed.

For several corridors that were realigned in the late 1990's and early 2000's, sketch maps were drawn based on original design drawings in 2005 and again in 2013. These were edited in the field to reflect existing conditions and channel evolution since implementation. These maps defined features such as benchmark locations, riffles, pools and reach-scale instream structures. Since they are completed at a sub-reach level, they reflect individual design components that were implemented to address specific habitat interests. From our inventories of these systems in conjunction with fish surveys, we can examine the suitability of the habitat for Redside Dace.