

Assessing Impacts and Benefits of Riparian Zones with the Riparian Ecological Function Index (REFI)

Samantha Wiest¹, Garrett Menichino³, S. Kyle McKay², Rosamar Ayala-Torres⁴, and Darixa Hernandez-Abrams¹

¹Environmental Laboratory (EL), U.S. Army Engineer Research and Development Center (ERDC), Vicksburg, MS, USA

²EL, ERDC, NY, NY, USA

³EL, ERDC, Jacksonville, FL, USA

⁴University of Puerto Rico at Mayagüez, Mayagüez, Puerto Rico

Riparian zones are important transitional areas between upland and stream ecosystems that improve water quality, provide ecological habitat and corridors, maintain natural hydrologic processes, and provide other important ecosystem goods and services. Riparian management has grown in prominence as these systems have become important foci of stream restoration efforts, stormwater best management practices, and greenspace corridors. Some regional tools have been developed to assess impacts and benefits of riparian zones, but no nationwide models or modeling frameworks adequately capture the effects of riparian outcomes. Existing tools tend to focus heavily into instream outcomes that follow a stream assessment protocol with the inclusion of minor riparian-oriented outcomes. Practitioners have an immediate screening need for multi-taxa tools that can function at national scale to assess impacts and benefits of riparian management actions. For this purpose, we develop the Riparian Ecological Function Index (REFI), which is a semi-quantitative, rapid assessment technique for the national application of riparian ecosystems. REFI structures a framework around three major outcomes: (1) the riparian zone's effect on instream outcomes, (2) its role in ecological connectivity, (3) how it functions as unique and important habitat. The model follows a semi-quantitative approach that relies on rapid field assessment protocols with optional, but heavily encouraged, desktop geospatial assessments. The REFI is intended for a variety of riparian ecosystems within the United States.

Contact Information: Samantha, Wiest, Research Environmental Engineer, U.S. Army Corps of Engineers, Engineer Research Development Center, 3909 Halls Ferry Road, Vicksburg, MS, 39180, USA, Phone: 970-301-9423, or 970-301-9423, Email: samantha.r.wiest@erdc.dren.mil