NSERC Canadian Network for Aquatic Ecosystem Services

Theme 2, Project 2.4/2.5

NO WETLAND IS AN ISLAND – QUANTIFIYNG THE CONTRIBUTION OF INDIVIDUAL WETLANDS TO THE RESILIENCE OF SPECIES-AT-RISK ON A PRAIRIE POTHOLE LANDSCAPE

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Abstract

We developed models to define the "perceived" wetland networks of two selected species-at-risk, and derived an index that represented the minimal wetland network configuration required for survival of the species. We developed a Wetland Attractiveness Index (WAI) to assess the goodness-of-fit of each wetland to the species' requirements. We develop a Movement Suitability Index (MSI) to assess the value of the habitat that surrounds the wetlands and relates amphibians' needs to the landscape crossed during their dispersal to other wetlands. The dispersion of the organisms through the wetland network was tracked, and a species-specific index of the integrity of the wetland network was estimated from a combination of the WAI, the MSI and the amphibian population dynamics. We found that each amphibian species had a "preferred" wetland network. Using the index mentioned above, we identified wetland network configurations that optimized the conservation of each of the species-at-risk, and showed where potential synergies and tradeoffs existed for conserving these vulnerable species.

Keywords: wetlands, amphibians dynamic, network, species-at-risk conservation, resilience

Geographic Location: Nose Creek watershed, Alberta, Canada.

How does your project link to Canadian aquatic ecosystem services?

My project links to ecosystem services provided by wetlands, and in particular on amphibians species-at-risk conservation.