

Measuring Wetland Health – Using Bioassessment Tools

Geetha Ramesh* and Lucie Sliva*

*Worley Parsons Komex

Healthy wetlands perform vital ecological functions in a watershed. But assessing their condition and ability to perform those functions is not easy, especially as wetlands are disappearing fast due to human encroachment. Estimated loss of wetland in the parkland region of Alberta is about 61%.

Alberta's water for life strategy and the wetland policy highlight the conservation of wetlands in Alberta. For a long time wetlands have been used as a natural treatment facility, since they provide a low cost, natural method of reducing levels of numerous constituents in storm water and wastewater. It is thus vital for us to review the status of wetlands and identify methods to assess wetland health.

There has not been comprehensive wetland studies conducted in Alberta making it difficult to make inferences about potential indicators of wetland health in the province. However studies in North America have indicated that there are several indicators of wetland health. This paper will discuss bioassessment methods available to directly measure biological integrity of wetlands and screen wetlands for signs of impairment. The paper also describes the development of an index of biological integrity (IBI) which is composed of multiple metrics each responding to the effects of a stressor. The information provided by these biological assessments can help us prioritize and target activities to protect and restore wetlands.

Geetha Ramesh

Dr. Ramesh has more than 18 years of experience in the field of environmental assessments, risk assessments and toxicology. Her specialization is in the field of risk assessment and aquatic toxicology. She was the technical manager for the Wide scale risk assessment for Teck Cominco at British Columbia (BC). She was also part of the team responsible for developing the rationale for site specific criteria for risk assessments in the mining sector in BC. She has been the project lead for aquatic assessments in several Oil Sands Environmental Impact Assessments (EIAs) in Alberta. Working with De Beers mining in Yellowknife, she was responsible for developing site specific criteria using the new species sensitivity distributions for aquatic health for the first time in Canada. She has also managed and led the team on health assessments for World Bank on mining jobs internationally. She is currently on the task force for developing ecological risk assessment guidance for the Province of BC. She is currently working as the technical director at WorleyParsons Komex.

Lucie Sliva

Lucie Sliva received her Bachelor's of Science and Masters of Science from University of Toronto in 2000 and 2003, and has over 5 years of experience in aquatic ecology research and project management. She has been with WorleyParsons Komex since 2005. Her experience encompasses many aspects of various freshwater ecosystem bioassessments including: springs, streams, rivers, lakes, wetlands and shallow (hyporheic) groundwater. Her varied skill set includes the analysis of ecosystem integrity using invertebrate, algal and microbial communities, and how these interact with hydrological processes, as well as water and sediment quality.