

# **EPA Coastal Communications**

## **AN APPROACH TO COMPARING BIOTIC CONDITIONS OF STREAMS AND ASSOCIATED SALT MARSHES (ORD & OW)**

### **Background**

Streams are lifelines linking land and sea. They receive water drainage from discrete land areas known as watersheds and they also influence coastal wetlands including salt marshes. The quality of water from streams, as well as the lakes and groundwater that feed them, is influenced by land use. The U.S. EPA's Office of Water (OW) has developed a watershed approach to resource management that focuses not only on water resources (*e.g.* streams, wetlands, lakes, and estuaries), but also on the land area that eventually drains into them.

### **Approach**

Researchers at EPA's Office of Research and Development (ORD), National Health and Environmental Effects Research Laboratory (NHEERL), are using OW's watershed approach to investigate critical linkages between land use, stream condition, and biotic integrity of coastal salt marshes. The goal is to compare indicators (measures) of stream condition with analogous indicators for the coastal salt marshes that receive this stream discharge. Research staff are using EPA's Rapid Bioassessment Protocol (RBP) for wadeable streams to collect data for indicators of biology (*e.g.*, insect larvae), physicochemistry (*e.g.*, total dissolved solids, nutrients), and habitat integrity (*e.g.*, stream bed material, tree cover) in six

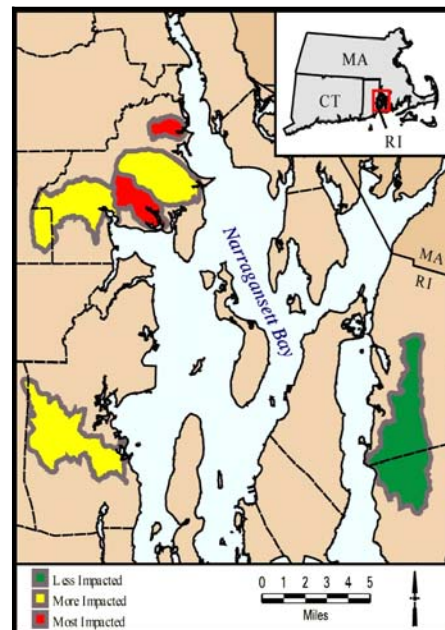


Figure 1.



Figure 2.

(6) Rhode Island watersheds that are impacted to varying degrees by residential land use (Figure 1). Next, they will compare these stream indicators to analogous indicators for salt marshes. Some potential salt marsh indicators include species richness of marsh plants, nutrient enrichment, and spatial coverage of the sensitive marsh grass, *Spartina patens* (Figure 2). This type of research will support OW's watershed approach by providing and refining biotic indicators to help coastal managers better understand the inter-connectedness of ecosystems and the importance of associated land use. The next phase of this watershed research will be to move beyond preliminary assessments to propose indicators for comparing stream and salt marsh ecosystems.

### **Further Information**

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