

## **Examples of Adaptive Management under GLRI**

### **Sediment remediation**

The cleanup of Areas of Concern (AOC) is an example of adaptive management. Using Great Lakes Legacy Act (GLLA) funds under the Great Lakes Restoration Initiative (GLRI), agencies conduct pre-project monitoring to understand baseline conditions and post-cleanup project monitoring to see if cleanup work has resulted in achieving cleanup objectives such as contamination in sediments and biota. For example, at the Ashtabula AOC, agencies conducted pre-project monitoring to establish a baseline of where contamination is and the impacts along multiple lines of evidence (chemical, physical and biological). After remediation efforts were completed, agencies conducted post-project monitoring to ensure their work met cleanup and AOC objectives so that the AOC could ultimately be delisted. Post-project monitoring revealed some pockets of elevated contamination levels remaining within the AOC. Consequently, agencies conducted further cleanup. In September 2014, the agencies declared that all cleanup actions had been completed. The agencies hope to initiate delisting in the near future. This is an example of adaptive management because pre- and post-project monitoring identified the need for additional work to ensure cleanup and AOC objectives were met.

### **Lake Sturgeon rehabilitation efforts**

Lake Sturgeon habitat in the Huron-Erie Corridor was non-existent or degraded pre-GLRI. Scientists surveyed the Corridor and designed reef habitat suitable for Lake Sturgeon. Reefs were placed in carefully planned locations throughout the Corridor. After the first reef was built, scientists monitored use by Lake Sturgeon and were able to refine the reef design and determine the size and placement of the rock structure best suited for Lake Sturgeon spawning. Subsequent restored reefs have been utilized immediately by Lake Sturgeon as spawning areas.

### **Targeting phosphorus losses from agriculturally dominated watersheds**

The Regional Working Group (RWG) established a team in 2011 to review available science on the causes of algal blooms and recommend strategic GLRI actions necessary to address these causes. A review of relevant research from similar teams, use of new watershed tools, and use of models informed targeted implementation and monitoring in three small watersheds. These Great Lakes watersheds are located in and representative of larger river basins contributing high loads of phosphorus to the lakes (e.g., Lower Fox, WI; Saginaw River, MI; Maumee River, OH). “Before-after” and “gradual change” study designs have been initiated to quantify water quality changes due to targeted GLRI projects. Information from these studies is guiding additional recommendations on implementation strategies based on measured benefits. An example of a lesson learned from this monitoring and adopted by landowners so far is to avoid applying fertilizers on frozen ground in the winter.

### ***Phragmites***

The GLRI began an unprecedented and ongoing regional investment in the control of the invasive *Phragmites* in Great Lakes basin. Regional mapping and modeling efforts produced the first basin-wide maps of *Phragmites* distribution in the coastal zone and identified areas most vulnerable to future invasion. Federal, State, non-profit, and private managers worked individually and through cooperative weed management areas to treat thousands of hectares of *Phragmites* with herbicide, flooding, fire, and other conventional approaches. At the same time, researchers

began exploring innovative approaches to control of *Phragmites* including biocontrol with insects, silencing genes associated with aggressive traits of *Phragmites*, and targeting plant-microbe symbiotic relationships. The Great Lakes *Phragmites* Collaborative (<http://greatlakesphragmites.net/>) was formed to maximize the collective impact of control efforts.