Community Based Monitoring for Lake Watershed Management

Arin Macfarlane Dyer & Bradley Peter
Outline

- All about ALMS
- LakeWatch
- Nutrient Budgets
- Stream Monitoring
- Outreach Programs
- Workbook for Lake Watershed Planning
What is ALMS?

- Charitable society, formed in 1991
- Two full time staff and up to four seasonal staff, 15 board members, ~60 volunteers
- Purpose: to promote comprehensive management of lakes, reservoirs and their watersheds.
Achieving Our Purpose

- Collect data to understand lake function and management options
- Educate and increase awareness of the importance of lakes and their watersheds
- Promote the protection and management of lakes and their watersheds
- Provide expertise and collaborate with others
What is LakeWatch?

- Monitoring program which allows individuals or stewardship groups to track the health of their lake over time.
- Volunteers meet technicians 5 times throughout the summer.
- Volunteers provide transportation!
LakeWatch Partners

- A cooperative venture between ALMS and Alberta ESRD:
  - 10 Base Lakes
  - 5 Provincial Parks Lakes

- Also partner with the Beaver River Watershed Alliance:
  - 10 Lakes within the Beaver River & N Sask River Watersheds.

- Funding from individual counties/municipalities to have specific lakes sampled.

Total = ~25 lakes each year.
Lakewatch Lakes

- Sampled over 100 unique lakes or reservoirs across the province.

- Just over 30 of which fall into the North Saskatchewan River Watershed.

- Last season’s lakes included:
  - Lac St. Anne
  - Pigeon
  - Jackfish
  - Mayatan West & East
  - Wizard
  - Laurier
  - Clear
LakeWatch Data

- Parameters collected include:
  - Nutrients (TP, TDP, TKN, Nitrates, Nitrites)
  - Metals
  - Temperature and Dissolved Oxygen profiles
  - Chlorophyll-a
  - Water clarity
  - Phytoplankton Taxonomy
  - Zooplankton Taxonomy
  - Routine Water Chemistry
  - Cyanotoxins (microcystin)
  - Invasive species…
Invasive Species Monitoring

- Intensive monitoring program looking for invasive zebra and quagga mussels.
- Involves monitoring for juvenile veligers and attached adult mussels at every lake sampled.
- First time monitoring has been conducted in Alberta.
- Monitoring for invasive plant species to start in 2014
Benefits of Lakewatch

- High quality data are used in managing lakes
- Data made public as well as uploaded into AESRD database.
- Increase awareness and empower stewards.
Mayatan Lake Success:

- Identified a concern for health of lake
- Led to the creation of a State of the Watershed Report.
- Began WQ monitoring through LakeWatch – now have three continuous years of data.
- Currently developing a Lake Watershed Management Plan
Pigeon Lake Nutrient Budget

- Rigorous monitoring program which will lead to the creation of a lake nutrient budget.
- Weekly enhanced lake sampling.
- Biweekly Stream Samples including flow and chemistry.
- Paleolimnology sediment cores
Steam Monitoring

- Tributary data is key to lake management
- Opportunity for citizen scientists collecting data on streams
- Ecotrust and TD have funded a pilot project in the Beaver Hills/Elk Island National Park

- Currently writing protocols for citizen collection of nutrients, TSS and flow data. Developing an equipment bank.
- Volunteers needed!
Education & Outreach

- AWQA
- Beach Outreach
- Events
Education & Outreach

- Monthly newsletter
- Annual workshop
- Webinars
- Presentations & promotion of LMP
Provide science-based direction and planning advice to make the most cost effective, balanced, and long-term action plan for a lake.

<table>
<thead>
<tr>
<th>Watershed Scale Source Activity Control</th>
<th>Eliminate or reduce sources which generate pollutants.</th>
<th>e.g. Fertilizer ban</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport Reduction</td>
<td>Capture and remove or convert pollutants before they enter target resource</td>
<td>e.g. Treatment wetlands</td>
</tr>
<tr>
<td>Instream/Inlake Treatments</td>
<td>Enhancing internal processes for pollutant inactivation</td>
<td>e.g. Aeration</td>
</tr>
<tr>
<td>Ecosystem Restoration</td>
<td>Repair damage to resources when controls fail</td>
<td>e.g. Fish habitat restoration</td>
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Workbook for Developing Lake Watershed Management Plans in Alberta

- Specific to Alberta
- Consistent with ESRD policies and legislation
- Targeted for WSGs

Available at www.alms.ca
Watershed Management Planning Cycle

1. Understand
2. Collaborate
3. Plan
4. Implement
5. Monitor
6. Adapt
New Projects

- Lake Management Framework
  - ESRD Water Conversation promises
  - Alberta Water Council Project Team
  - Alberta Environmental Monitoring, Evaluation & Reporting Agency (AMERA)
In the NSRW?

- LakeWatch
- Nutrient Budgets
- Stream Monitoring
- Education & Outreach
- Lake Watershed Management Planning
Questions?

780-702-ALMS
www.alms.ca