Building a 20 Year Dataset

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What data will we wish we had collected in 20 years?

Challenges for tribes
- Funding
- Specialized staff
- Data management expertise
- Staff turnover
- Time....

Develop guidance
- Canned protocols
- QAPP language
- Regional consistency
Tribal Climate Change Monitoring

- Overlaps with RMN efforts
  - Additional media (tribal specific)
    - Air quality
    - Phenology
    - TEK (Traditional Ecological Knowledge)
      - Maple syrup
      - Berries
      - Wild Rice
  - More specific protocol guidance
Temp/DO Buoys

- Pilot project – 3 years
- Number of lakes –
  - 4 at Red Lake
  - 3 at Grand Portage
Cost

- Cost per lake – highly dependent upon need for DO loggers and depth.
  - Generally 10 temp loggers ($1,290)
  - 2 DO loggers ($2,500)
  - 1 level logger ($299)
  - Rope, anchors, zipties ($100)
  - Total = $4,189

- Shoe-string version (where we don’t need DO or level)
  - $1,390
Funding Sources

- How did we obtain equipment?
  - GLRI project with Grand Portage
  - Base funding for monitoring program
  - BIA Tribal Resilience Program
Challenges

- Trickiest part
  - Recovery in large lakes
  - Data storage
  - How will we use this data?
Challenges

- **Adjusting for depth when deploying**
  - Don’t attach DO or other top sensor until deployment
  - Temp sensors are easy to add/remove

- **Accommodating water level fluctuations**
  - Secondary buoy

- **Matching depth/temp with discrete samples**
Known distance here allows for corrections to discrete profiles. Could reduce differences occurring in thermocline. May require 2 discrete profiles.
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Lessons Learned

- Sync the shuttle
- Shade the shuttle
  - Too sunny or misaligned sensors don’t communicate
- Use backup temp loggers with DO loggers
- Add a known depth to the retrieval line or buoy top
Value of DO sensors

- General DO monitoring
- Changes in mean DO
- Internal Loading
Big Traverse Bay Site 4, June 19th - October 6th, 2015
Thanks!