

Biotic Communities Breakout

October 6th, 2004

SOLEC 2004

Discussion Worksheet Questions and Answers

Number of Worksheets Submitted: 18

Focus Question 1: What are these indicators telling us? Are the individual indicators and overall assessments correct and useful? Are they telling us things that can lead to better restoration and protection of the Great Lakes basin ecosystem?

Invasive species indicators are a measure of discovery more than introduction. We should look at both vector control measures and risk assessment of species posing a higher risk of invasion.

- Trends in yields – Walleye - diversity of stocks? Supports yield; accompanied by some monitoring coverage measure
 - # of stocks: total stocks/fisheries to be able to interpret trends (diversity) of stocks supporting yield estimate
- Invasives – discovery vs. introduction measures
- What are the types/benchmarks
- Invasive Species – if a large impact of invasives is trophic/foodweb disruption, then would energy transfer measures be helpful to monitor the degree to which ecosystem function has changed from some “baseline” which supports desired fish communities, species biomass.
- Sea Lamprey description is a good model for how to interpret abundance trends in a way that is useful for managers. I.e. is abundance within target range and which will support meeting lake trout FCOs on each lake. This is an indicators useful to managers
- Invasives – need indicators which will illuminate functional changes which should be of concern to fisheries managers – what management action is appropriate? Can we manipulate the foodweb disruption to meet fish management objectives or is it time to amend our management expectations.

How much monitoring work is being considered for these indicators? What units are being looked at?

- At a regional scale, not sure. Are there assessments/indicators relevant at RAP/AOC such as Toronto?
- Hard to ignore the subjectivity of the assessments. If there are less subjective assessment methods, these should be highlighted of advanced.

Forage bases are changing – long term consequences?

Contaminants are declining – how far is far enough?

Coastal wetlands are refugia, yet sensitive bird and amphibian species are declining – why?

Invasive species other than lamprey are not adequately addressed.

Need to expand non-native species – perhaps with “potential” invasives not currently in the Great Lakes. McIsaac/Ricciards postulate a number of species “likely” to invade the Great Lakes.

I believe indicators are essentially telling us we still have issues (Asian carp). Without continued funding, seemingly past issues will once again become present and future issues i.e. sea lamprey. Prevention is the best cure.

Talk to Lisa at the Council of Great Lakes Governors.

Please put somewhere that the exchange of ballast water is done to maintain the security of the people on board, the goods and the ship actualize the text:

- Construction of Chicago barrier, it's on its way
- Canada new strategic plan (accepted in September 2004)
- IMO Convention

Needs units (measurement criteria)

#8 Salmon and Trout – I use of non-native species that requires extensive human intervention (stocking) appropriate? i.e. non-native salmons

Indicators are almost universally mixed where known. Trends seem more commonly deteriorating. Indicator for non-native aquatic seems “lumped” compared to other indicators.

Yes, individual indicators (i.e. sturgeon) are very helpful for building momentum and resources (i.e. Congress); however, there are complex relationships with things like sea lamprey – i.e. sturgeon protocol for lampricide treatment.

- Indicators are providing subjective assessments
- Indicators are useful, assessments may be disputed but this is healthy and will lead to evolution of more standardized/vigorous assessments.

#104 was discussed at length in 2002 and concluded to be unsuited in its present form. I am surprised to see it still on the list without qualification. Same for #109.

Invasive species - missing piece is tracking populations (status and trends) of other non-natives besides sea lamprey. Have indicators related to coarse level of risk (i.e. incoming species which are discovered) and ecosystem response (i.e. biotic indicators like plankton, benthos etc.), but not more finite level of risk from those species which get a toe hold (Gobies, ruffe, mussels etc.)

Focus Question 2: What refinements, simplifications, or enhancements would you propose: To the assessment process? To the bundling of indicators?

Include a level of effort and effectiveness of research (projects targeted at AIS impacts/prevention). Include discussion of potential invaders so public is educated about what to be on the lookout for, possibly facilitating rapid response. (example: spread of gobies towards salt water; species is threat to both fresh and salt water). Publicize EPA's Environmental Tech. Verification Program (for Ballast water treatment) and best available technology.

NIS biomass: Native Species biomass

Gather data from anyone who is collecting it. Make sure that all data collected can be compared to each other.

Although indicator suites evolve, it might be worth trying to integrate them (at least the more longstanding ones). It would help in summarizing and simplifying use by the reader (at the risk of losing information, of course!)

Should provide status reports on major invasive species.

An indicator of lakes is not only status, spread of already established NIS, but risk of new AS (NIS) via vectors i.e. mussels, many varieties, a couple are established, risk assessment of potential invasions. Put money into new invasion may get money for prevention.

Used the GIS and land cover analysis to look for likely areas of invasion. Use food web to integrate to bundle.

Genetic diversity and divergence (stock structure/population structure) measure added for key species. Invasive species – need list of critical ones at present and evaluation of status/spread/change.

Repetition of indicators in multiple bundles: need better rationale for how groupings were made and how they are to work as a bundle (together) – Integration. E.g. Biotic communities – contaminants in x takes only 3 of 9 from toxics in biota group.

Indicators seem wildly disparate in scope ranging from specific fish species to all benthos.

Should have the big 10 AIS listed (beside sea lamprey) i.e. ruffe, round goby, quagga etc.

Not ready to comment. Assessment of fish species should include comments regarding “stocks” as appropriate e.g. walleye. Units of indicators; baseline.

Exotics – need indicators of both spreading of existing exotics e.g. % potential habitat already invaded and number of new invaders over time.

All indicators need refining, definition of endpoints etc. (Sorry that I haven't been able to review these previously – combination of email malfunction and lack of time)

Algae as stressors to Great Lake system/human health

- Release of algae toxins from cyanobacteria
- Importance of physical structures in nearshore areas (impoundments, breakwaters) in affecting phytoplankton community structure – not just nutrients

Focus Question 3: What are the key management implications that emerge from evaluating the indicators in this category?

- Target more funding towards prevention using quantitative targets using model of sea lamprey control

- Use successful indicators efforts to provide justification for more resources for developing other indicators (build on success/publicize and generate grass roots support)
- Describe a desirable end state that recognizes change/adaptation to change in a productive way
- Sea Lamprey and fish populations and FCO objectives – New trends vs. management objectives more clearly helps managers know where increase control is necessary: Lake Superior, Michigan, Huron.
- Use as a model for what is needed to make the reported indicator(s) status
- Useful to managers – what ecological function, form needs to be addressed, can it be addressed? If not, do I now need to manage user expectations (with new management objectives or resume)
- Where can I get the most for money, effort?
- How do we react to loss of native biodiversity e.g. disappearance of Diporeia
- Translate what this indicator means to human values/uses i.e. production of commercially harvested species and therefore what managers need to do to ensure harvest levels are sustainable
- At different indicator measures, when will x,y,z stakeholders be at managers door demanding action and what are realistic management actions
- “we don’t know when we get there” FCO’s don’t provide measurable benchmarks – needs investment dollars

In order to evaluate an indicator there must be an endpoint. The management question is: what is “restored”? How much equals protection? Area specific management decisions. What will this mean to the ecosystem as a whole?

* Last sentence in indicator #9 – Further work necessary.

Where should the money be spent? How much effort has to be applied to have some effect? Is monitoring a particular indicators ever going to lead to any significant political will to change the underlying problem?

There’s a bit of a conundrum that many of the management decisions with regard to land use operates at a smaller scale (i.e. municipalities) whereas, there indicators show unclear linkages to their level of spatial organization. For example, how does 20% of land area in the Toronto region lost to development in 10 years impact Lake trout? Indicators have management implications only for lake management (clearly) less for land management.

Land use decisions to sustain ecosystem

- control/treat urban runoff and agricultural runoff
- conserve/recharge water tables

Key management implications

- halt invasions by invasive species
- restore/protect shore wetlands

Provide decision makers with advice on what are the most urgent needs and that must be done

- allocation of limited resources to get best result for the least spending

Indicators are the result of upper management to see value for the dollar. Perhaps political suicide to research potential threats, but I refer you to comments already made in #1 and #2. Is this generations legacy to the next that of clean up after our management? This has already been inherited once!

None – very hard foe a decision maker

Long term management – you should develop an indicator on sustainable development

OR

Short term management – find a way to tell/indicate the emergencies to the decision makers.

Protecting and maintaining habitat.

Protecting diversity

Resources are better spent on preventing rather than controlling non-native species. Ability to “manage” biological systems on a Great Lakes basis seems very limited.

Food web management where possible.

How do we react to loss of native biodiversity?

- Harvest control of fish
- Fish stocking
- Habitat manipulation

- Management implications should be related to existing plans/objectives
- Maybe indicators can be bundled according to pressing issues at time of given SOLEC, along with reporting them in the established bundles, like a management “vignette”
- Resource managers are the best folks to decide how to tackle issues, nuts and bolts wise, SOLEC should focus on assigning issues with priority along with associated supporting data.