



Eastern Georgian Bay Stewardship Council

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Summary of Presentations EGBSC Lake Stewardship Workshop Theme: Climate Change and YOUR Environment

July 29, 2010
Parry Sound Curling Club

Note: The following is a brief summary of presentation material. Complete presentations are available – look under the “Annual Workshop” tab at the top of the home page of the EGBSC: www.helpourfisheries.com



The EGBSC expresses its profound appreciation to the presenters at our 2010 Lake Stewardship Workshop. All presentations were interesting, informative and entertaining. We thank them for generously giving of their time and effort to make the workshop a success.

Presentation #1:

Dr. David Pearson (Laurentian University)

The Science of Climate Change

- Climate change is not a phenomena of the future; it is happening now
- Need 30+ years of observations to detect change
- Since 1895, annual temperature has warmed 0.5 – 1.0 deg. C; minimum temperatures are up 2 deg. C; annual precipitation has increased by 20% (Env. Canada)
- Climate change a two-part problem: 1) Adaptation to the change; 2) Limiting or mitigating the change
- Absorption of sun's energy by a greater area of open water (melting polar ice) warms the region – melting permafrost and releasing methane that further accelerates warming. Permafrost area is decreasing in polar region.
- Permafrost acts as 'cap' on methane trapped below the permafrost and formed originally by the decay process. Methane is 20 times more powerful as a green house gas than carbon.
- Global temperature has consistent from 10,000 years ago to 1940 – average temperature being 15 deg. C.
- Only a 5-7 deg. change between the last ice age and this time period
- CO₂ only one of several factors affecting global temperature, but levels directly correlated with temperature
- The 'kick-start' for natural global cooling and warming is the geometry of Earth's elliptical orbit, the tilt of our axis and wobble within the axis, but it is the subsequent release of CO₂ with the loss of polar ice/snow that keeps the warming trend going.
- The oceans are the big storehouse of CO₂ gases; 50 times that of the atmosphere
- Cold water dissolves (holds) CO₂ better than warm water
- Climate responds to the patterns of oceans and continents; these change over the eons of time
- More people die from heat waves than any other climatic phenomena - 35,000+ deaths in Europe in 2003 when temperatures exceeded 40 deg. C.
- Observations / predictions of shorter winter, more rain, less snow, less ice cover and for a shorter period – all have considerable winter tourism impacts
- Climate change will / has facilitated the dispersal of forest pests (e.g. Mountain Pine Beetle in BC)
- Canadian Climate Change Scenarios Network: www.cccsn.ca
- Average temp. and CO₂ rise likely to result in additional stressors on forests (increased evaporation / transpiration, increases susceptibility to pests and fire)
- Impacts on water resources: increased evaporation – lower lake levels, less ground water, water quality and quantity issues, loss of wetlands, spawning areas, shoreline infrastructure issues
- There will always be nay-sayers, but the data points conclusively to a recent and significant change in our climate.

Presentation #2

Kenton Otterbein (Ontario Parks) and Glenda Clayton (Geo. Bay Biosphere Reserve)

Climate Change and local impacts on flora and fauna

Kenton:

- More evapotranspiration, less snow melt – earlier and more severe fire events
- Global warming contributes to conditions that increase amphibian mortality
- Distribution of some species will contract (Brook trout) whereas others – more generalist in environmental requirements will increase (smallmouth bass)
- White birch could disappear from the Great Lakes region; this in turn may have a significant impact on ruffed grouse that eat the buds and catkins
- For animals, northern expansion of their range generally constrained by climatic conditions; to the south constrained by competition with other species.
- 177 species of birds have shifted their range north over the past 40 years
- A reduction in Grey jay abundance in Algonquin Park can be attributed to warmer winters. Climate predictions suggest southern part of range may be in the James Bay area by 2100
- Moose subject to detrimental impacts associated with climate change: heat stress, brainworm associated with white tail deer expansion, winter tick.

Glenda:

- Currently 35 Species At Risk (SAR) in our area; climate change will be an additional stressor
- Species at Risk from: habitat degradation (pollution, habitat loss), persecution, road mortality, invasive species, over-exploitation (collecting, harvesting)
- For 80% of SAR, habitat loss and degradation are key factors
- How will climate change impact SAR: move, adapt or die
- Southern Ont. including the parry Sound area – already has the highest concentration of SAR in Canada
- Some species will benefit from climate change: generalists, broad habitat range, mobile, rapid reproduction, adaptable to humans (e.g. – racoon, white tail deer, rock bass)
- Other species will be negatively affected: wetland species, insect eating birds, long-distance migrators (e.g. – least bittern, chimney swift, Canada warbler, Monarch butterfly)
- Increased predation from expanding species such as racoon, opossum and wild turkey will negatively impacts more sedentary species such as Massasauga rattlesnake, turtles and Five-lined skinks
- How can you help?
 - Decrease habitat fragmentation and improve natural corridors (start in your own backyard; support conservation efforts; advocate for mitigation efforts regarding roads and development)
 - Improve your knowledge (Get involved in a monitoring program)
 - Reduce your environmental footprint and energy demand

Kenton:

- There are signs of hope amidst the doom and gloom scenarios!

- Trees Ontario – plant 50 million trees by 2020; enhanced corridors for wildlife; sequesters carbon
- Success story with the banning of DDT
- Banned CFCs – 20 years later the ozone hole over Antarctica has stabilized
- Acid Rain emission reductions – rejuvenation of the terrestrial ecosystem around Sudbury. We can help nature heal itself – we can kick-start an entire ecosystem.
- Voluntary reductions in pollution don't work – need government regulation and enforcement.

Presentation #3 – Francine MacDonald (Ont. Federation Anglers & Hunters)

Invasive Species and Climate Change

- Introduction to OFAH / MNR Invasive Species program
- Invasive species characteristics: few predators, adaptable, reproduce quickly, out-compete for food and habitat, thrive in disturbed ecosystems
- 1500 alien species documented in Canada. Most from Europe, North Africa followed by Asia. 180 invasive species are currently established in the Great Lakes ecosystem. 10% have significant ecological and economic impact.
- Invasive species are the second greatest threat to biodiversity (after habitat loss); climate change will exacerbate effects
- 400 non-native insects and diseases in North America; can eliminate entire tree species (e.g. Mountain Pine Beetle)
- Climate change – enhanced pathways for invasive introductions; this is an additional stress that will further facilitate invasive species introductions and spread
- Climate change will also facilitate range expansion of native species with detrimental impacts (e.g. rock bass, smallmouth bass, and black crappie). Will also facilitate expansion of invaders already established (e.g. Kudzu, fanwort, Common Reed (phragmites) and round goby)
- What can we do to help?
 - Prevent the spread of invasives. Boaters, gardeners, campers, mountain bikers, ATV users, aquarium owners – be aware and protect against the inadvertent spread of these species
 - Early detection: Report sighting to the invasive species hot-line: 1-800-563-771 or www.invadingspecies.com
 - Participate in a monitoring program
 - Share information with your family, friends and neighbours.

Presentation #4 – David Sweentam (Geo. Bay Forever) and Jon Midwood (McMaster U)

Climate Change and Wetlands

David Sweetnam (Executive Director – GBF):

- GBF Mission – protect, enhance and restore the natural ecosystem and aquatic environment of Geo. Bay through funding and accredited research ... Water is a common heritage and a fundamental human right ...
- Website: www.georgianbayforever.org

- Geo. Bay water levels are down a meter from 1998. Although this has happened previously – unlike the past the levels are remaining low and stable.

Jon Midwood:

- Water level impacts on wetlands: wetland stranding (isolated from the Bay), habitat alterations, fish community changes, barrier to fish movement
- E. Geo. Bay: over 5000 hectares and 3000 wetlands
- Predictions are GB water levels will drop an additional 2 meters by 2050
- Since 2002, 10% of wetlands in the McMaster Coastal Wetland Inventory (MCWI) have become stranded; 15% have been significantly altered
- Since 1987, habitat loss has ranged from 39 to 81%. This has been dramatically reflected in a reduction in the diversity of fish community composition.
- Between 2002 and 2008, there have been significant changes in vegetative classification within the Tadenac Bay wetlands – specifically towards more meadow and low density, floating vegetation areas, which provide no or poor habitat for fish
- Between 2003 and 2009, fish species richness (variety of species) has declined; pumpkinseed has become the dominant species present. Blackchin shiner, tadpole madtom and all cyprinid (minnow) species have decreased in abundance. Wetland fish communities are becoming more homogenous.
- Conclusions: Climate change driven low water levels strand coastal wetlands, alter aquatic habitat and change (decrease) the composition of coastal fish communities.