

Haliburton County Lakes

Stressors and Troubling Indicators



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Two Imperatives

- 1. The health of Haliburton's environment and its economy and property values are connected and dependent on the reality, not merely the image, of outstanding water quality.**
- 2. Water quality protection and maintenance is "job one" for all of us**

The Image

Haliburton is home to 600+ pristine lakes



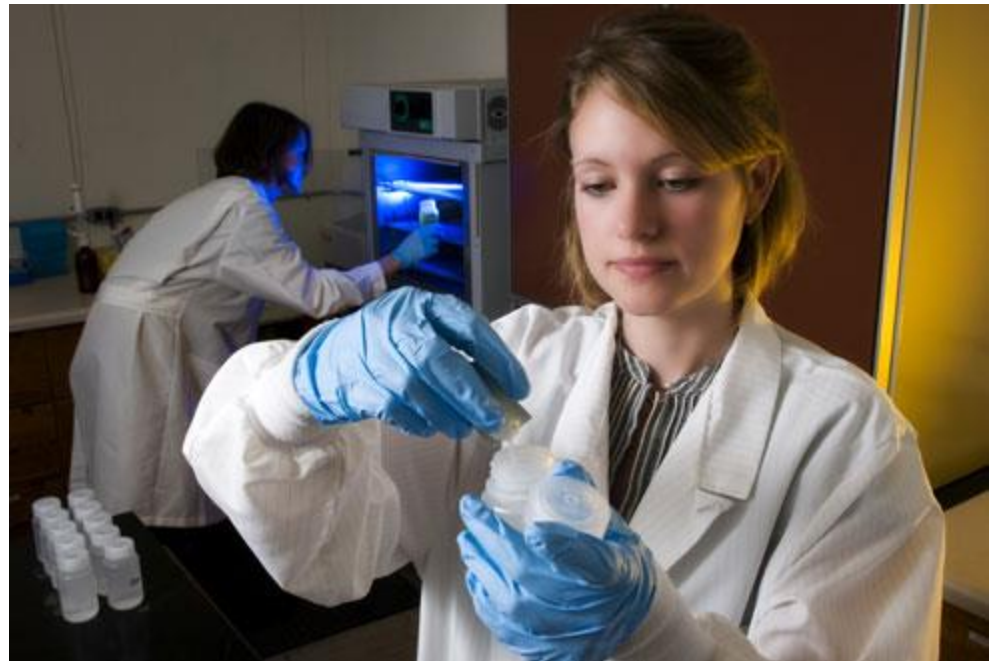
Ignorance was Bliss

For years lake associations

- Did secchi disk and phosphorous testing
- While not ideal there was not a lot of change



- **But indicators were troubling**
 - **Weed growth ↑**
 - **Fish populations ↓**
 - **Foul odours ↑**
 - **Algal blooms ↑**



Dr Norman Yan - MOE

Multiple Stressors

Phosphorous +

- Calcium declines
- Runoff ↓ 25%
- Invasive species ↑
- Open water season length ↑
- Temperatures ↑





Response

- Set out to learn & share more
 - Numerous training courses
 - Expert speakers
- Did more testing
 - Dissolved Oxygen
 - Calcium
 - Invasive species
 - Coliform & E Coli
- Investigated actions that could be taken to improve the situation

What did we find?

It is no exaggeration to
state that what we have
found so far

Has Scared Us

Dissolved Oxygen (DO) Levels

The Trout are in Trouble



Oxygen Levels

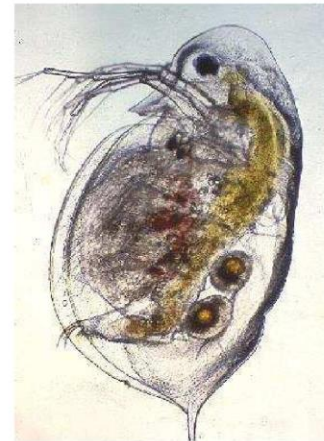
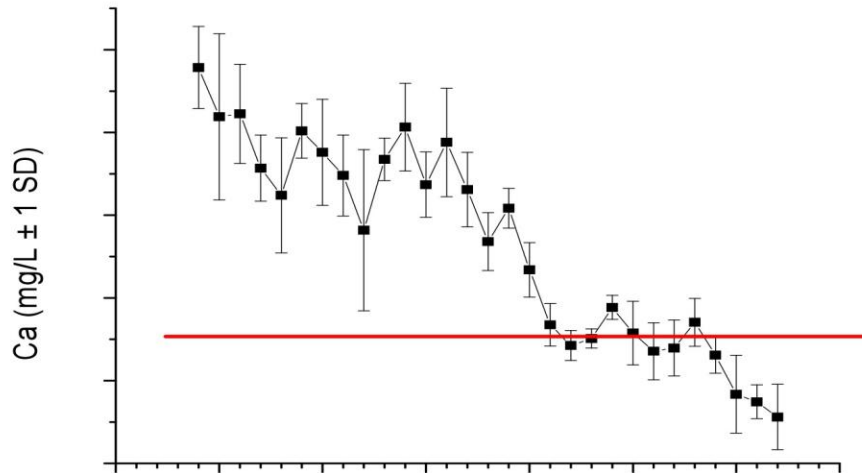
- 45% of Haliburton's cold water trout lakes have (DO) levels of less than 7mg/l
- below 7 mg/l lake trout are at risk

Notes – this is based on testing that is now a number of years old

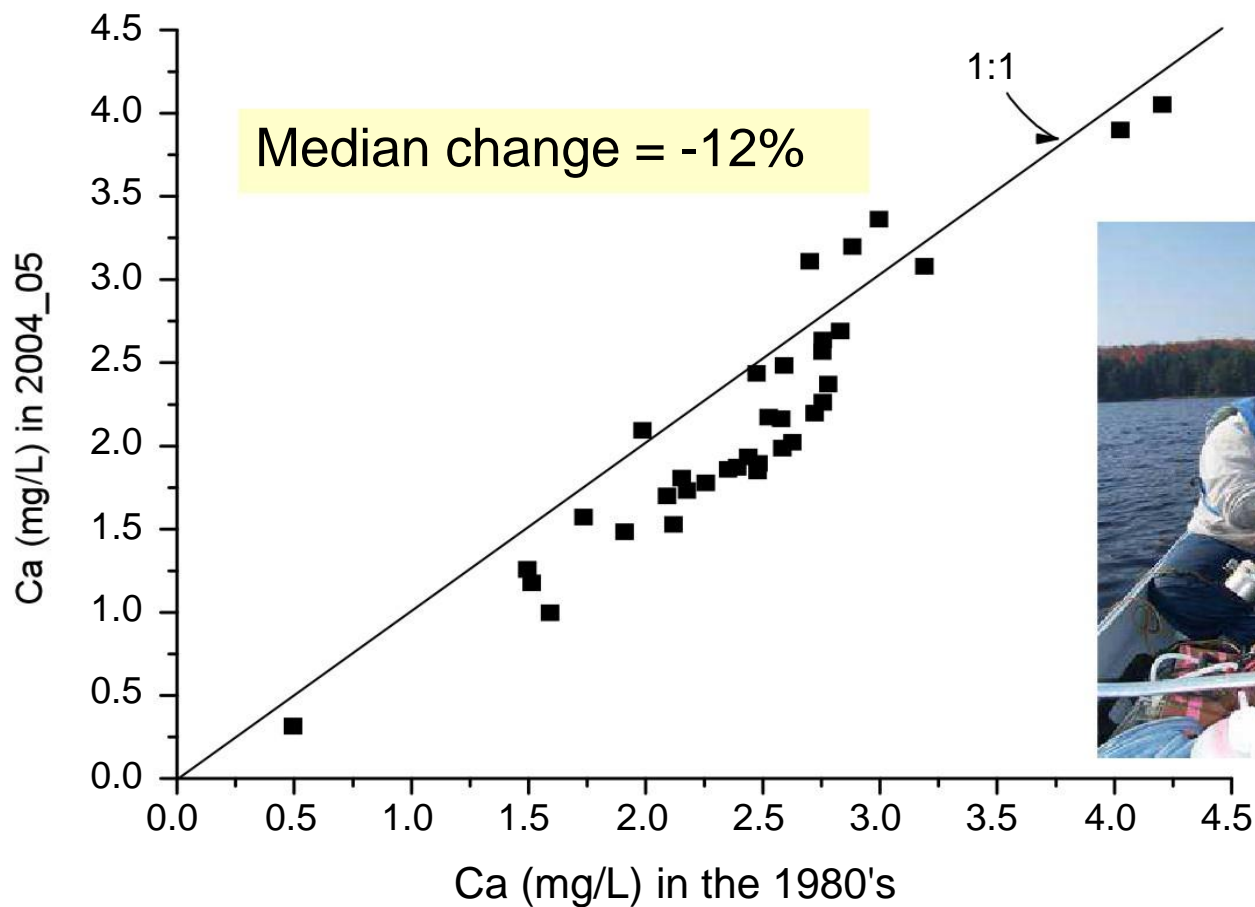
MOE was planning to be back in Haliburton testing last year – they now say it may be 2014-15 before they get back

Phosphorus and Calcium Levels

Static Phosphorus levels are driving excessive nutrient loading;
Declining Calcium levels are threatening algae eating organisms
such as the Daphnia



Ca decline in 37 Muskoka/Haliburton lakes*



*Michelle Palmer's PhD vs. old DESC data

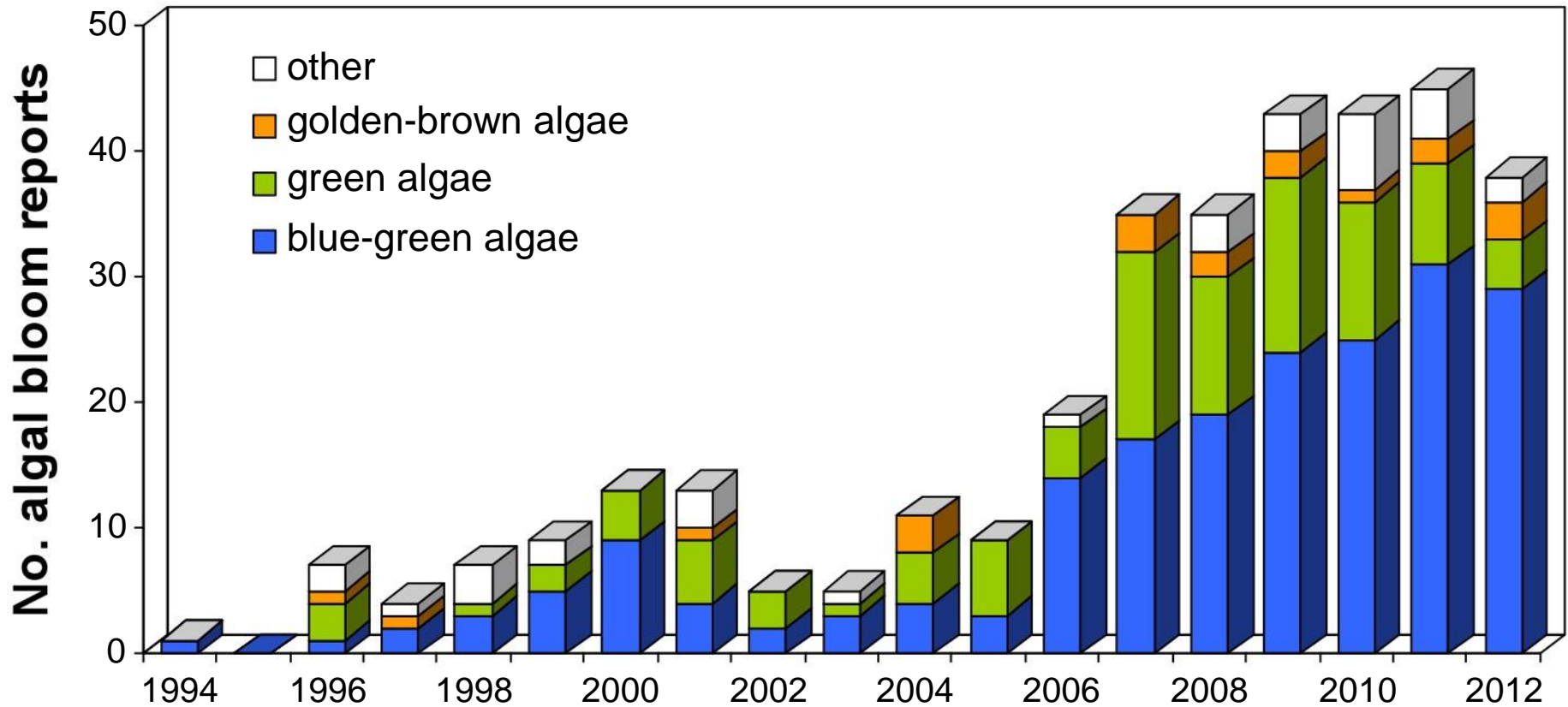


The “little
living
lawnmower”
*Daphnia**

It's ~3% Ca

* Photo by D. Taylor, U of Buffalo

Algal blooms Are Increasing



↑ total, green & blue-green algae bloom reports from 1994-2012 ($p < 0.001$)

For more information see: Winter et al. (2011) Algal blooms in Ontario, Canada: Increases in reports since 1994. Lakes & Reservoir Management, 27:105-112.

Blue Green Algal Bloom

What do you do



BG Algal Bloom – to do

- Notify MOE Spills Action Centre at 1-800-268-6060.
- Notify your lake association so that they can let all members know
- Do not let anyone swim in water including pets
- Do not let the water into your house/cottage
 - No treatment system will render it safe
 - Some methods will release toxins into air
 - Including boiling
- Do not eat fish from lake or use water to cook with

Dead Zones in Haliburton Lakes 2012



Global Warming is altering the rules of the game

Changes to the hydrological cycle across Eastern North America

- Less precipitation as snow and less snow accumulation
- Earlier snow melt
- Earlier and lower spring flows
- Increased winter flows
- Higher flood levels
- Shorter period of ice cover
- More extreme weather events including drought

Global Warming is altering the rules of the game

Changes to water chemistry

- Increased Water Temperatures
 - Average Haliburton Lake Temp up 1.5° in decade
- Decreased dissolved oxygen
 - One lake down 60% in 5 years
- Increase nitrate levels in streams

The Biggest Contributors To Our Lakes Declines

- Septic Systems
 - Every system pollutes
 - 1 in 4 systems are not working properly
- Un Natural Shorelines



What is Killing our Lakes?

- Are Septic Systems alone killing our lakes – probably not
- Is Shoreline De Naturalization alone killing our lakes – probably not
- Is Climate Change alone killing our lakes -- probably not

What is Killing our Lakes?

Is the synergy of

- **Septic Systems,**
- **Shoreline De Naturalization and**
- **Climate Change**

Killing our lakes

Yes it is

Who will look after our lakes

- All levels and stripes of govt are cutting back
 - MNR
 - MOE
 - Feds
- More and more will fall to underfunded and under staffed lake associations

Most Important Individual Actions

- Septic Systems

- Time and Bacteria**

- Time by minimizing water use (1 drop in = 1 drop out)
 - Bacteria by eliminating all bacteria killers +



- Tip sheet available

Shoreline Naturalization

- Replace this with next slide



2 years



Questions

