

Vessel-Based Climate Change Education: An Example Program

Cynthia Hagley and Jesse Schomberg
MN Sea Grant

Sue O'Halloran and Amy Elliot
UW Superior

AN INCONVENIENT TRUTH



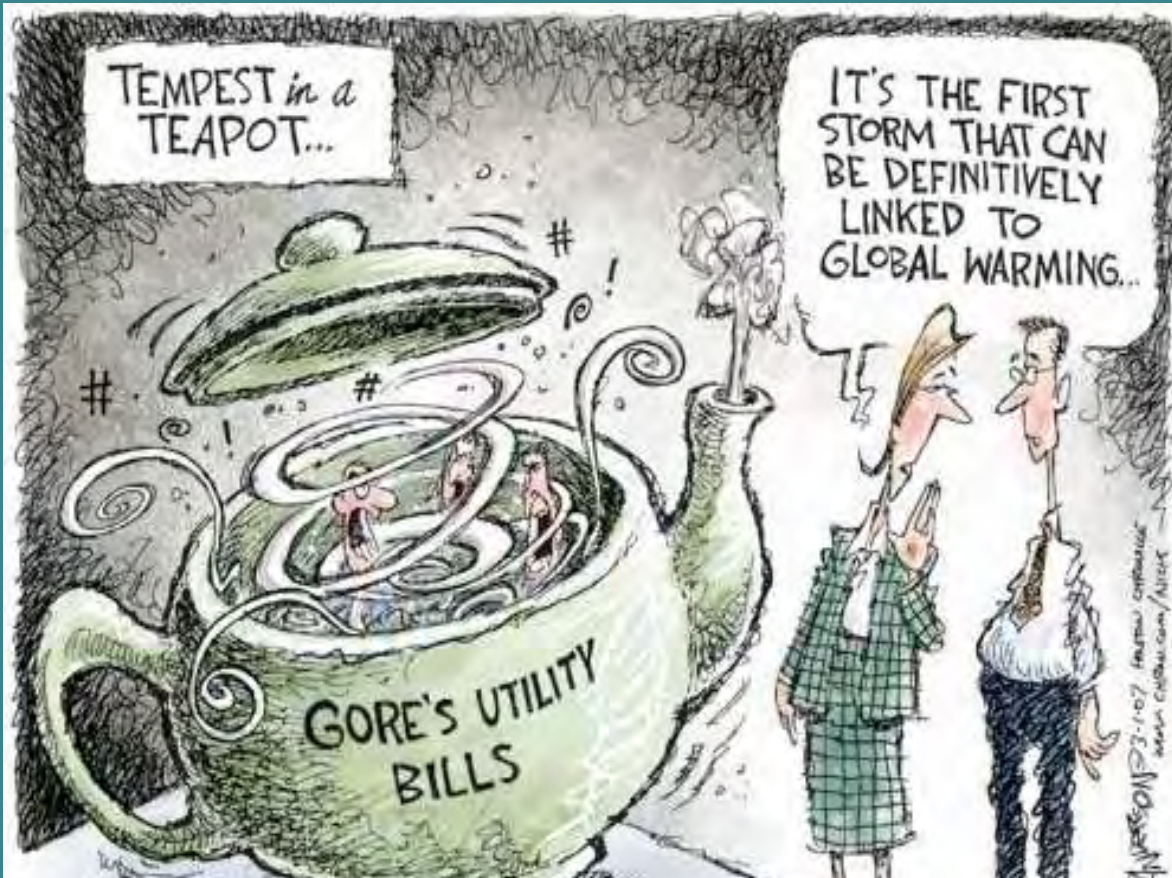
<http://www.adamzyglis.com>

A CONVENIENT LIE

...I REALLY
COULD GET
ELECTED
PRESIDENT...

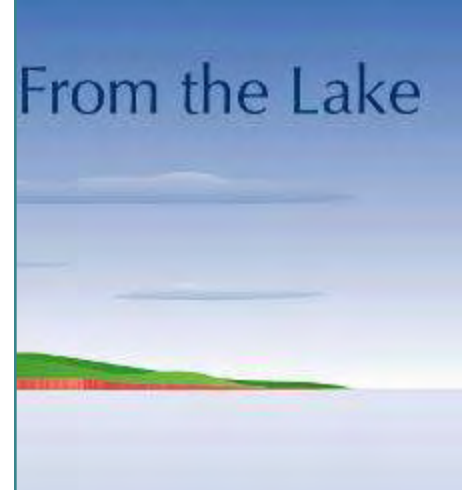


TEMPEST in a
TEAPOT...



<http://neatorama.cachefly.net/images/2007-02/al-gore-utility-bill.jpg>

From the Lake



Austin American-Statesman

COMMENTARY: JOHN KELSO

Perry may not believe in global warming, but he's probably sure Big Foot is for real



Monday, October 22, 2007

I'm thinking about filing an open records request with the Governor's Office to find out where Rick Perry keeps his membership card to the Flat Earth Society.

The reason I should do this is that Perry said he doesn't believe in human-made global warming in a speech he made last month to California Republicans.

**MOST POPULAR
STORIES**

"I've heard Al Gore talk about man-made global warming so much that I'm starting to think that his mouth is the leading source of all that supposedly deadly carbon dioxide," Perry said. "Virtually every day another scientist leaves the global warming bandwagon ... "

<http://www.statesman.com/news/content/news/stories/local/10/23/1023kelso.html>

SPECIAL REPORT GLOBAL WARMING

TIME

**BE
WORRIED.
BE VERY
WORRIED.**

Climate change isn't some vague future problem—it's already damaging the planet at an alarming pace. Here's how it affects you, your kids and their kids as well

EARTH AT THE TIPPING POINT

HOW IT THREATENS YOUR HEALTH

**HOW CHINA & INDIA CAN HELP
SAVE THE WORLD—OR DESTROY IT**

THE CLIMATE CRUSADERS



[http://scienceblogs.com/framing-](http://scienceblogs.com/framing-science/upload/2006/08/TimeCoverGlobalWarming.jpg)

[science/upload/2006/08/TimeCoverGlobalWarming.jpg](http://scienceblogs.com/framing-science/upload/2006/08/TimeCoverGlobalWarming.jpg)

A View From the Lake

- Media feeding frenzy

NATIONAL CENTER FOR POLICY ANALYSIS
HOME DOCUMENTS ABOUT CLIMATE CHANGE
Climate Science: Climate Change and Its Impacts
NCPA Study

No. 285
Monday, May 15, 2006
by Dr. Robert W. Anderson, C.C.M.

- I. [Executive Summary](#)
- II. [Introduction](#)
- III. [Computer Models Are Unreliable Due to Faulty Data and Unsound Assumptions](#)
- IV. [Conclusion: Links Between Greenhouse Gas Emissions and Severe Climate Impacts Are Tenuous](#)
- V. [Conclusion: Links between Greenhouse Gas Emissions and Severe Climate Impacts Are Tenuous](#)
- VI. [Notes](#)
- VII. [About the Author](#)



SEARCH

[Policy Issues](#)

[NCPA Publications](#)

[Both Sides](#)

[Commentaries](#)

[Audio/Visual](#)

A banner image for RealClimate featuring a large, bright orange sun on the left, a dark, rocky cliffside in the background, and a blue lake with white ice floes in the foreground.

RealClimate

Climate science from climate scientists

26 October 2007

The certainty of uncertainty

Filed under: [Climate modelling](#) [Climate Science](#) — group @ 1:10 PM

A paper on [climate sensitivity](#) today in *Science* will no doubt see a great deal of press in the next few weeks. In "[Why is climate sensitivity so unpredictable?](#)", Gerard Roe and Marcia Baker explore the origin of the range of climate sensitivities typically cited in the

View From The Lake

n the Lake



Three hour tour.....

~450 people
per summer

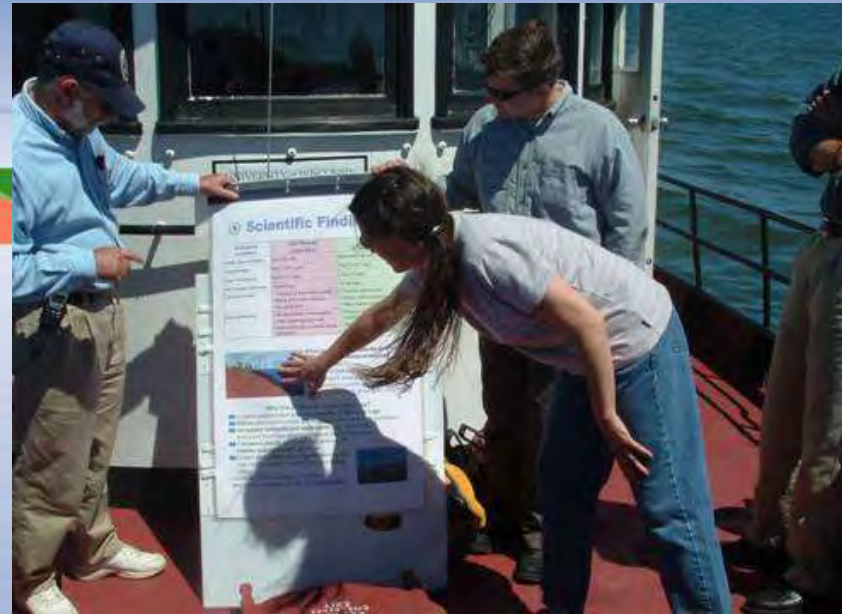


Four Years of Views....

- Land use connections to water quality
 - 2004: Looking at the land – development impacts
 - 2005: Food webs, wetlands, coastal habitats
 - 2006: Climate change, mercury, and stormwater impacts
 - 2007: A fish eye view – Lake Superior from the eyes of a coaster brook trout

Common Format

- Short lecture on land to set the stage
- Combination of discussions and activities on boat
- Water quality, plankton, and benthos sampling mid-trip
- Big emphasis on individual and community actions that can make a difference



Scary Outreach...

- Avoid emotional debate and encourage objectivity
- Inspire personal responsibility and behavior change
- Provide straightforward “how to” guidance



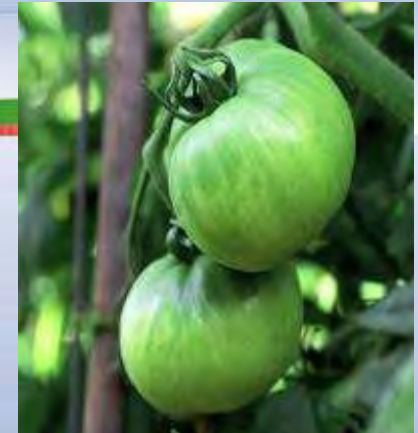
2006 Climate Change Slide – Humor helps...

Positive Proof of Global Warming



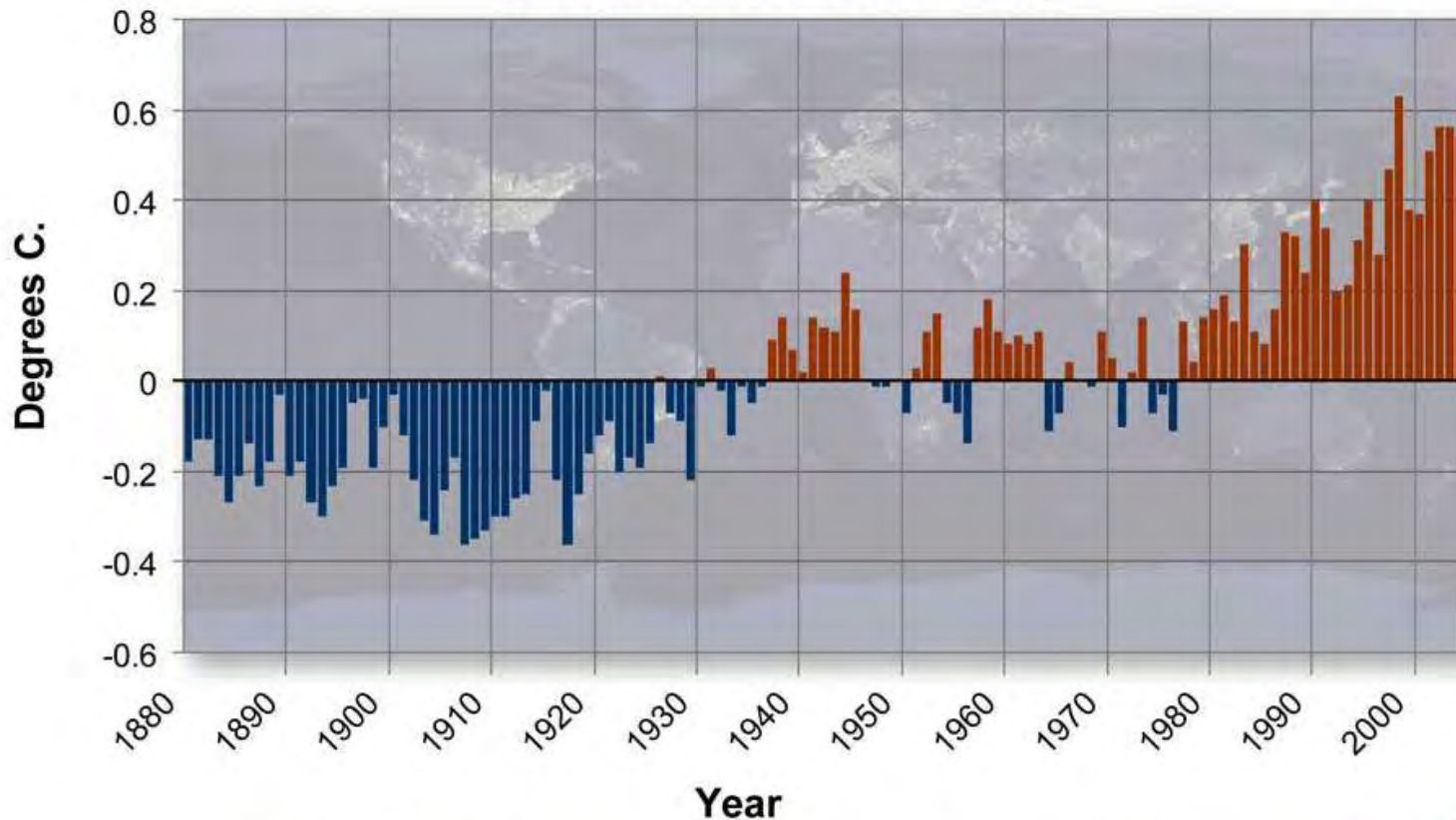
***18th
Century***

What have you observed?



What if trends continue?

Annual Global Temperature Anomalies, 1880 - 2004
(From the 1880 - 2003 Mean)

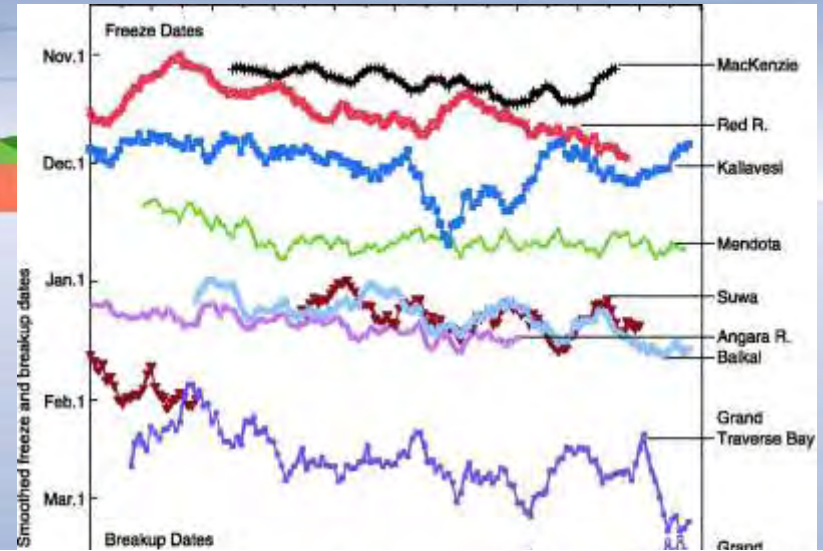


Data Source: ftp://ftp.ncdc.noaa.gov/pub/data/anomalies/annual_land.and.ocean.ts

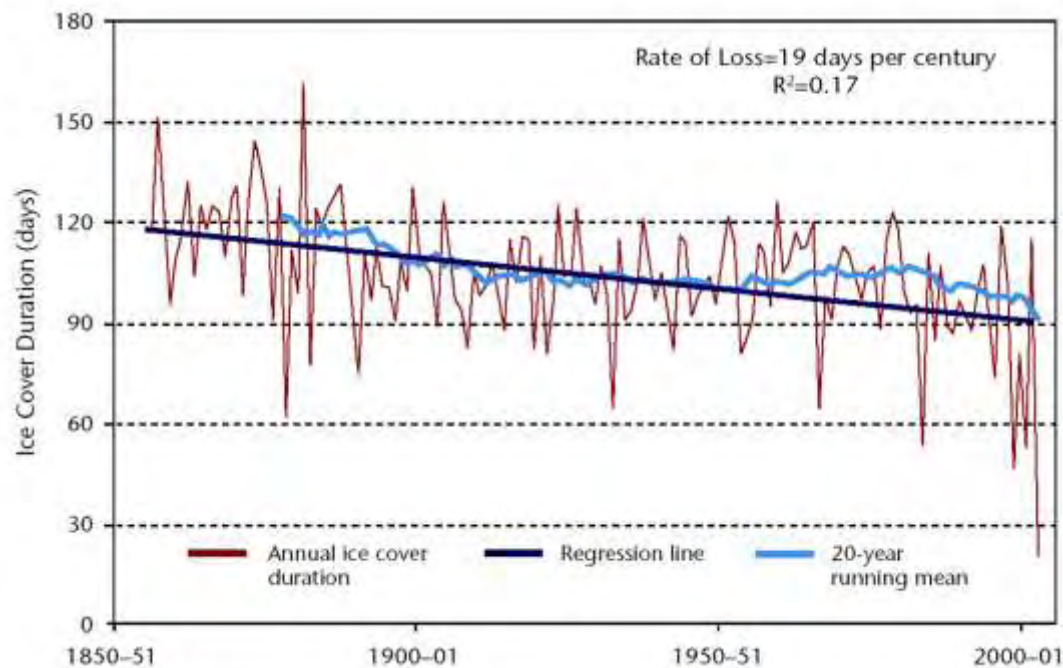
Graphic: Michael Ernst, The Woods Hole Research Center



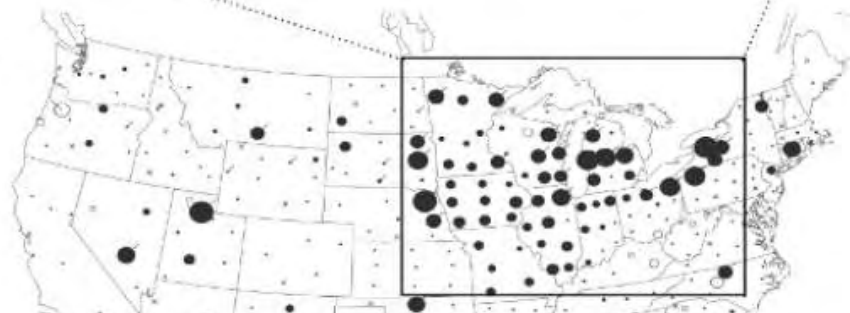
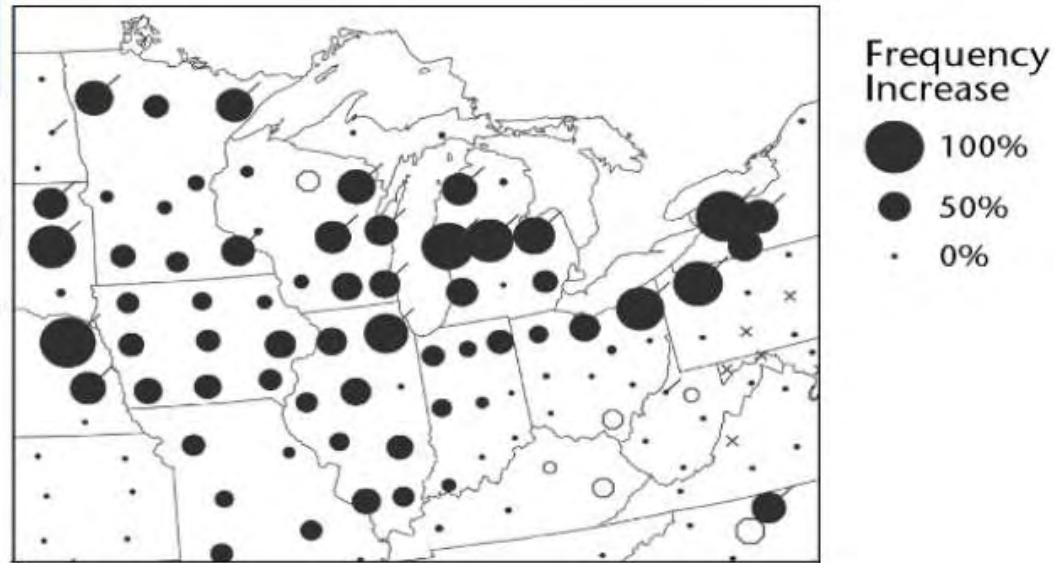
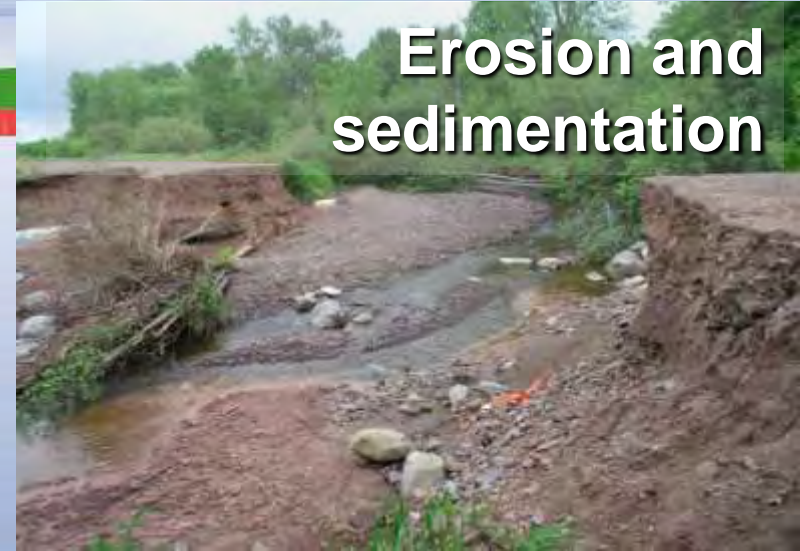
Ice Cover Data



Recreation and tourism shifts



Storm Event Data



2007: A Fish Eye View

Which fish is native to Lake Superior?

- A. Rainbow trout
- B. Brown trout
-  C. Brook trout
- D. Steelhead
- E. Rainbow smelt

22%
Correct

If coasters are native, what happened to them?

- What a coaster brook trout needs to thrive
- What has changed in the last century
- What brook trout status tells us about the health of the lake as a whole, now and in the future

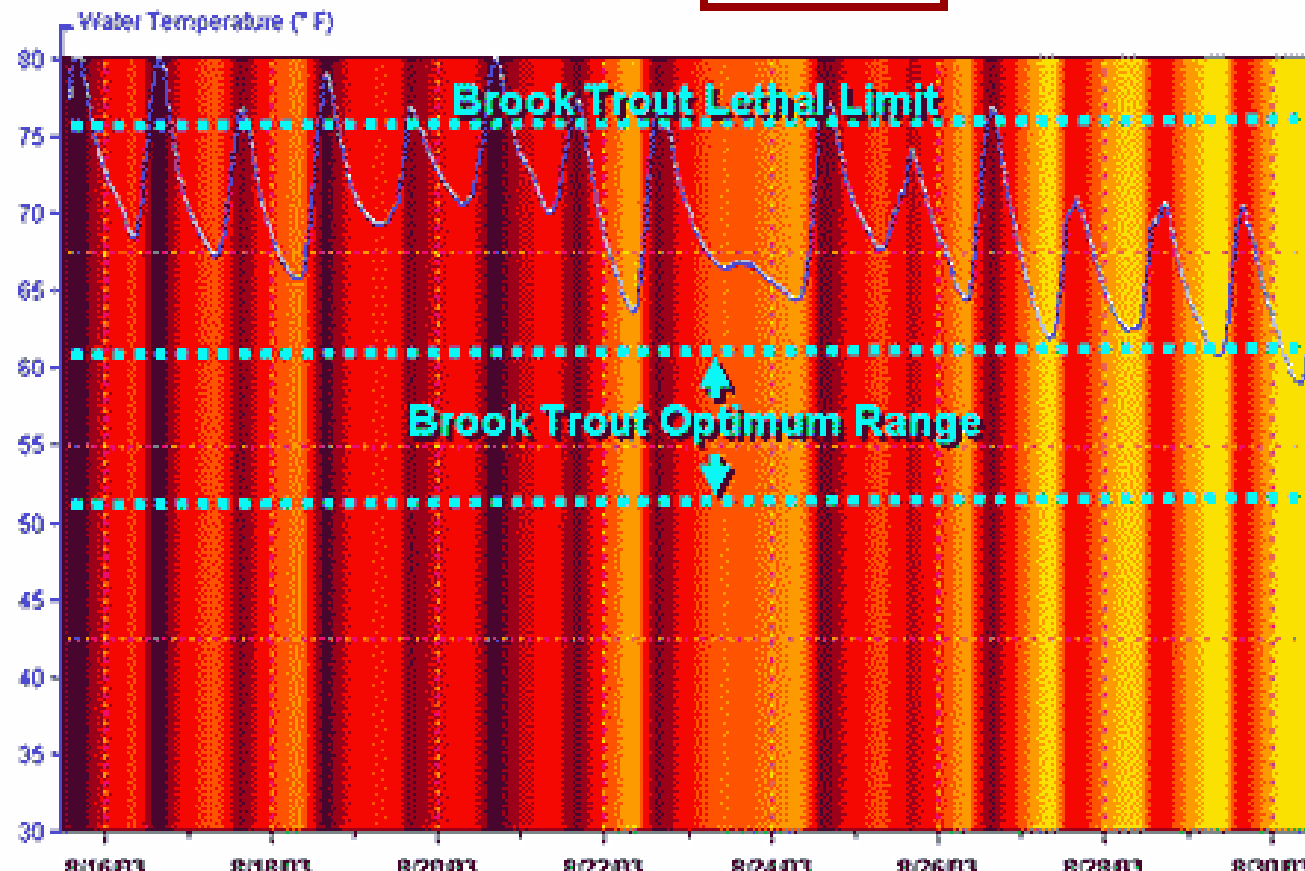
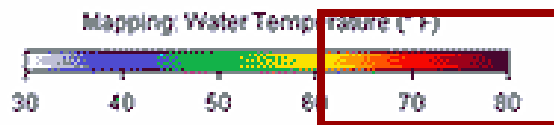


Thermal impacts in Kingsbury Creek



http://www.fisheyesoup.com/article_details/295.html

Kingsbury Creek, Duluth, MN



If you were a Brook Trout...

What problems would you be seeing in the streams and nearshore areas of Lake Superior?



➡ Nowhere to lay eggs



➡ Water flows too fast for young fish



➡ Competition for food



➡ No place to hide





What's your role?

What part can we play in protecting this ecosystem?



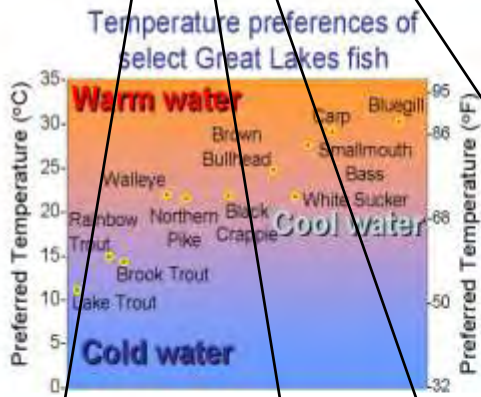
Water temperature too warm

Nowhere to lay eggs

Water flows too fast for young fish

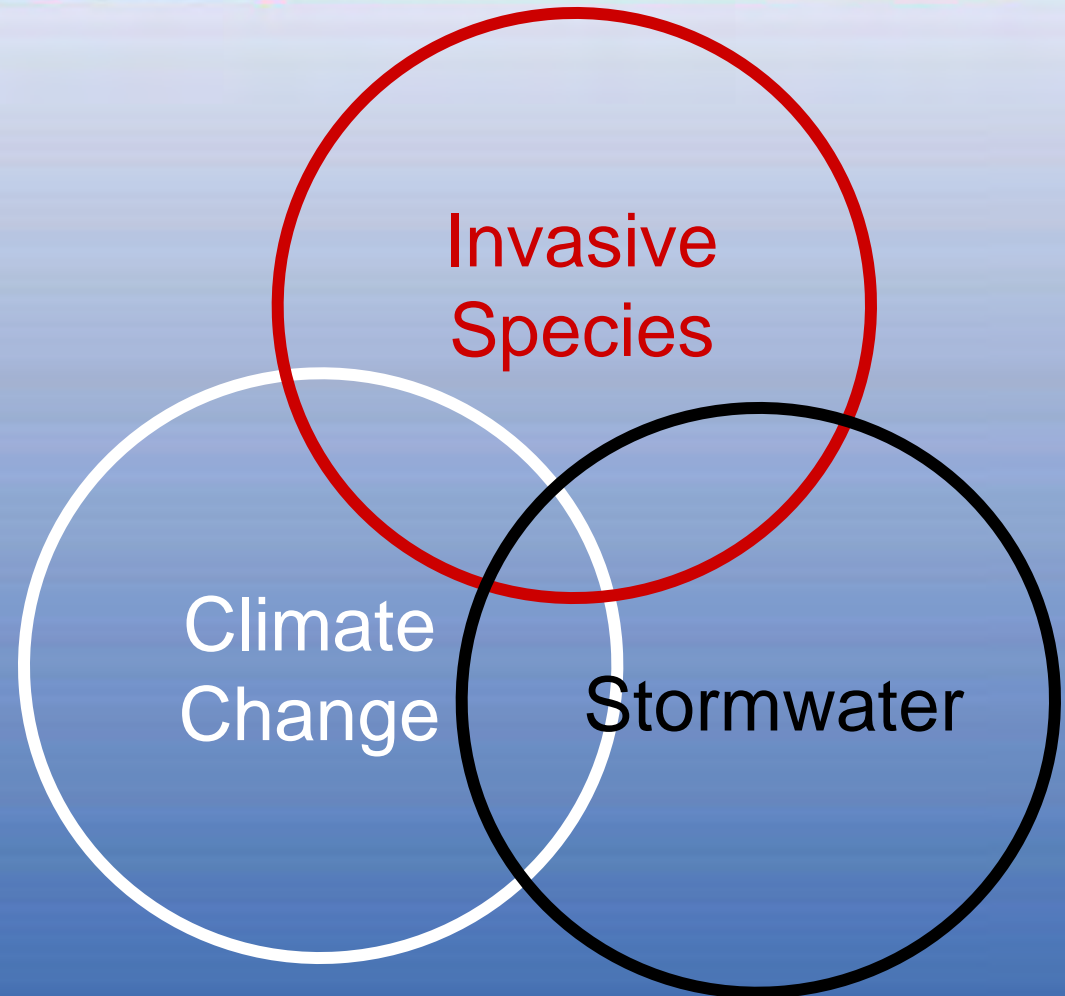
Competition for food

No place to hide



Take home messages:

- Environmental issues are inter-related
- Some of the same solutions help with all these issues
- You can make a difference at the local level



Your Viewpoint.....

Climate change is affecting Lake Superior and the land surrounding the lake.

87%

- A. Yes
- B. No
- C. Not sure



Your Actions

Given your current understanding of climate change, do you believe you need to make changes in your own lifestyle?

78%

- A. Yes
- B. No
- C. Not sure



9% said, "No, I do not need to make changes."

Scary outreach summary

- Incremental steps – start from “where people are at”
- Local examples
- Connect the dots – a few simple connections from things they can see
- Let people make their own discoveries
- Simple, “doable,” common sense solutions that yield many benefits (no gloom and doom)