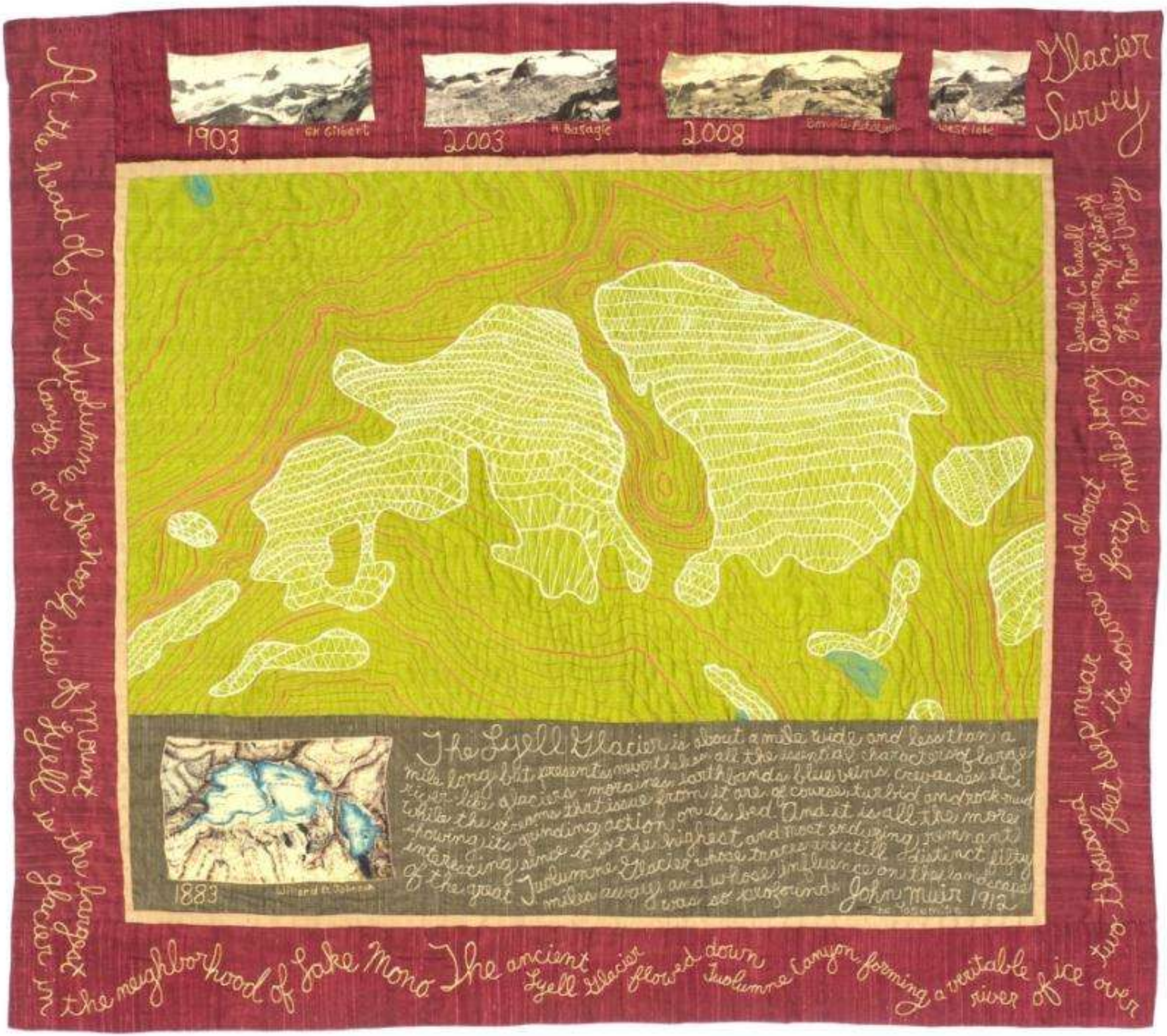


Glacier Survey
1903
GK Gilbert
2003
H Basagic
2008
West lobe
1883
Willard D. Johnson
The Lyell Glacier is about a mile wide and less than a mile long but presents nevertheless all the essential characters of large river-like glaciers moraines earth bands blue veins crevasses etc. while the streams that issue from it are of course turbid and rock-mud showing its grinding action on its bed. And it is all the more interesting since it is the highest and most enduring remnant of the great Tuolumne Glacier whose traces are still distinct fifty miles away and whose influence on the landscape was so profound. John Muir 1912
At the head of the Tuolumne canyon on the north side of Mount Lyell is the largest glacier in the neighborhood of Lake Mono The ancient Lyell Glacier flowed down Tuolumne Canyon forming a veritable river of ice over two thousand feet deep near its source and about forty miles long.
Israel C. Russell Quaternary History of the Mono Valley 1889


LANDMARK PINES


PLEASE
STOP
AND
Remove All
Aquatic Plants
and Drain Water
From Boat and Trailer
Wisconsin Department of Natural Resources
ANGLING
REGULATIONS FOR
WALLEYE
LAKE
Trout
DAILY BAG LIMIT
3
MINIMUM LENGTH LIMIT
15 INCHES
Wisconsin Department of Natural Resources
EURASIAN MILFOIL ALERT!
PLEASE REMOVE ALL AQUATIC PLANTS
FROM BOATS AND TRAILERS
Wisconsin Department of Natural Resources
Lake Management Program
Exotic Species Advisory
These Waters Contain The Following
Harmful, Exotic Species:
Help prevent the spread of harmful, exotic
(non-native) plants and animals:
Wisconsin laws prohibit launching a boat or placing
a trailer or boating equipment in navigable waters
if it has aquatic plants or zebra mussels attached.
Remember...Clean boats - Clean waters
Wisconsin Department of Natural Resources
Debris burning
is the number one
cause of wildfires
in Wisconsin
Don't let your leaf pile get away.


COMMINGLED RECYCLABLES
CAUTION
CAUTION
VEOLIA
ENVIRONMENTAL SERVICES
800-303-9089
www.VeoliaES.com
ONE WAY
BOAT LANDING
CAMPGROUND
TOILET

LTER Home Page

LTER Sites
Andrews LTER
Arctic LTER
Baltimore Ecosystem Study LTER
Bonanza Creek LTER
Central Arizona - Phoenix LTER
Cedar Creek LTER
Coweeta LTER
Florida Coastal Everglades LTER
Harvard Forest LTER
Hubbard Brook LTER
Jornada Basin LTER
Kellogg Biological Station LTER
Konza LTER
Luquillo LTER
McMurdo Dry Valleys LTER
Niwot Ridge LTER
North Temperate Lakes LTER
Palmer Station LTER
Plum Island Ecosystem LTER
Santa Barbara Coastal LTER
Sevilleta LTER
Shortgrass Steppe LTER
Virginia Coast Reserve LTER
Download a copy
Download the Brochure as a .PDF (Requires Adobe Acrobat Reader)
Get Acrobat

North Temperate Lakes LTER

Study of Yellow Perch Improves Natural Resources Management

At the North Temperate Lakes LTER site, we have observed cyclic dynamics in a population of yellow perch in Crystal Lake over the past 20 years. Since 1981, three large cohorts of similarly aged fish have sequentially dominated the population for roughly 5 years each (Figure 1, Sanderson et al. 1999). Understanding the causes of these repeated oscillations in fish populations is an important challenge for improving fisheries management.

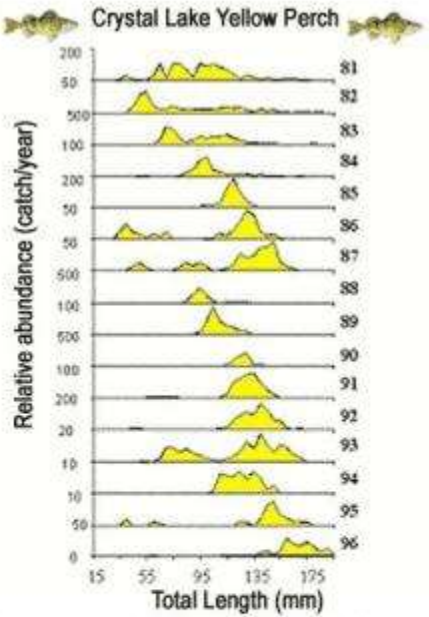
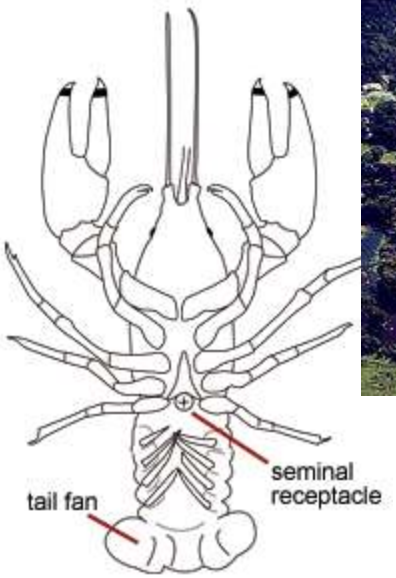


Figure 1. Relative abundance (CPUE) of yellow perch (Perca flavescens) in Crystal Lake as a function of size for years 1981-1996.

Regular cyclical change is one of the most intriguing types of population fluctuations for biological study. Recurrent oscillations in natural populations

The North Temperate Lakes LTER is conducted on lakes in the Madison area, as well as in the northern highland lake district of Wisconsin.



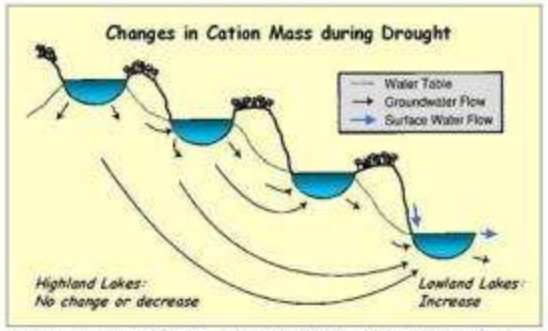
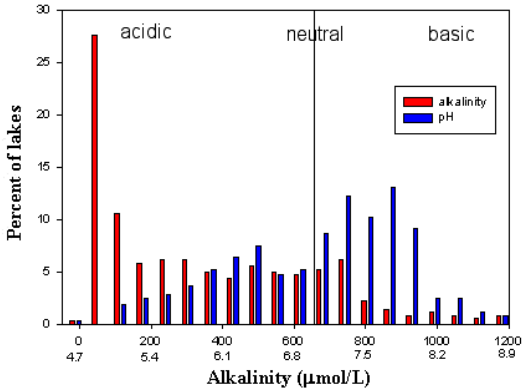
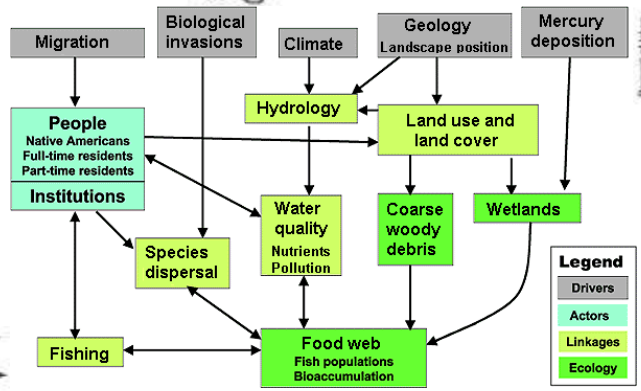
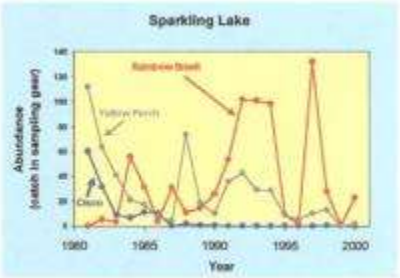
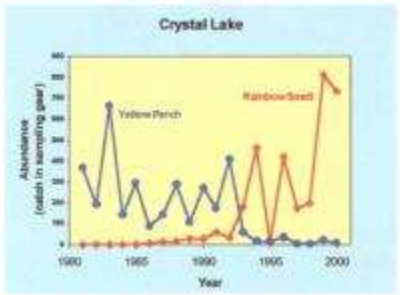


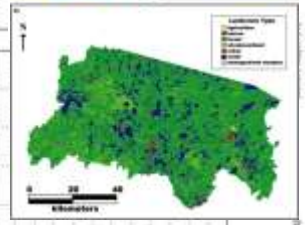
Fig 1. Changes in cation mass of the NTL-LTER lakes during drought. Lakes are arranged along the landscape position gradient. (Adapted from Webster et al. 1996)

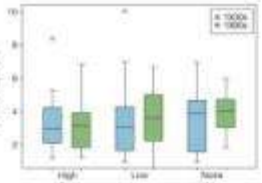


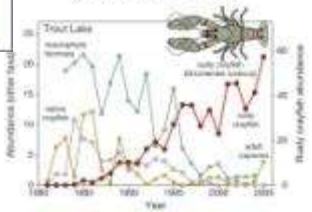


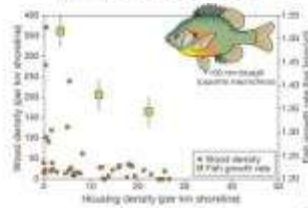


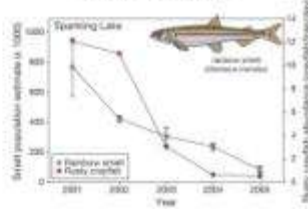


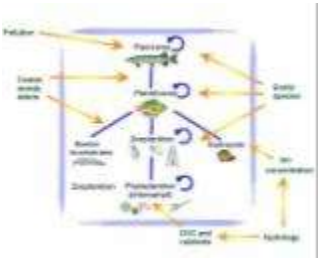


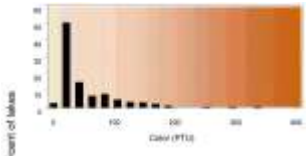


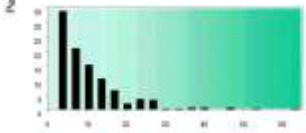


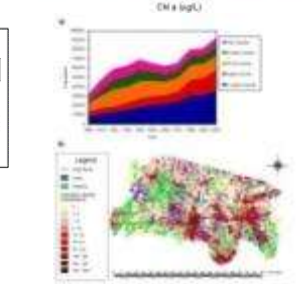




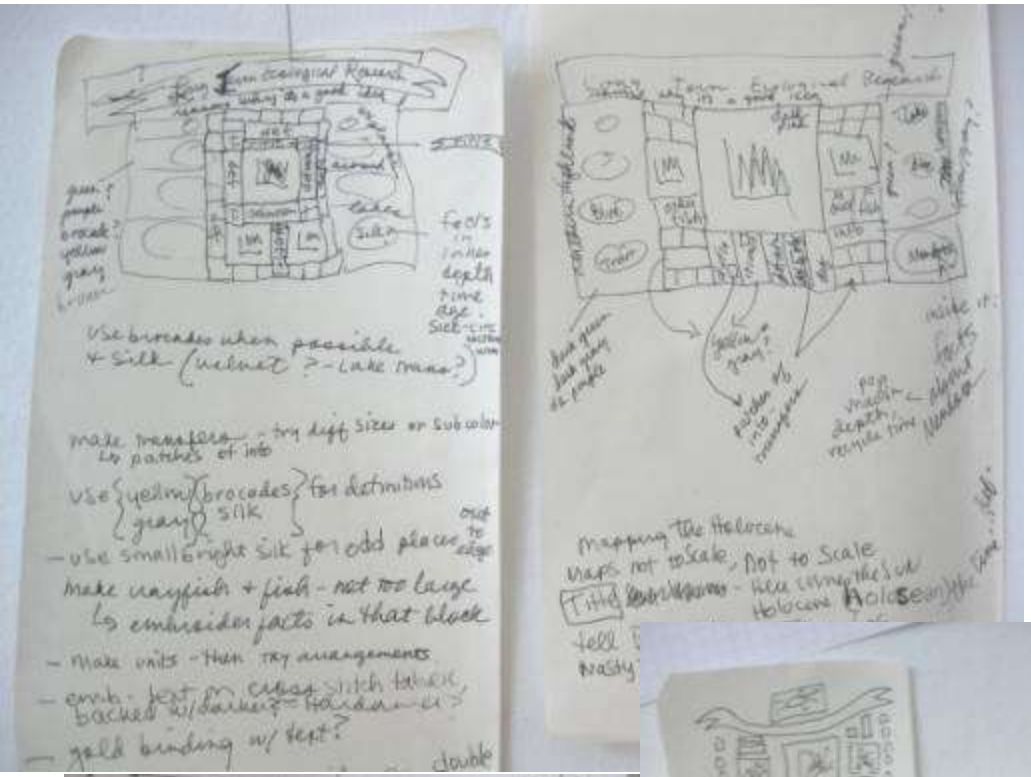


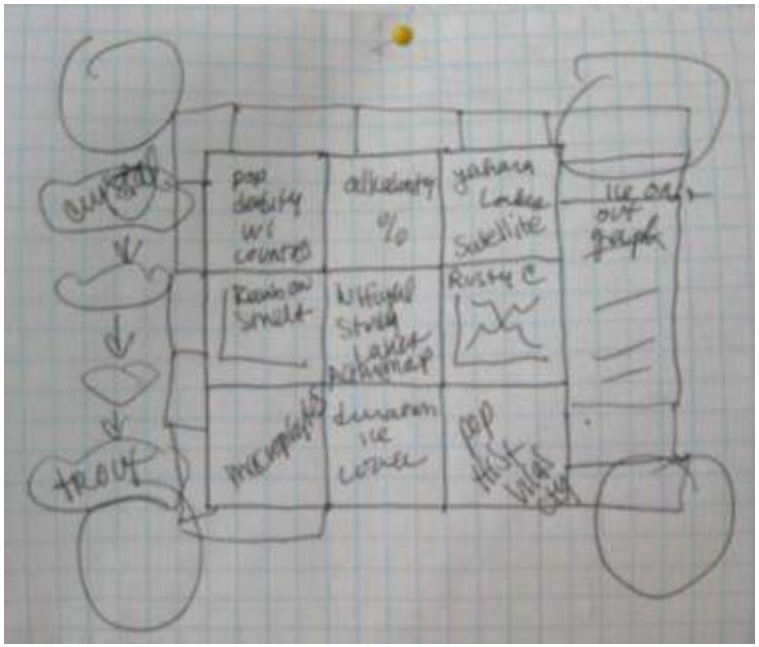


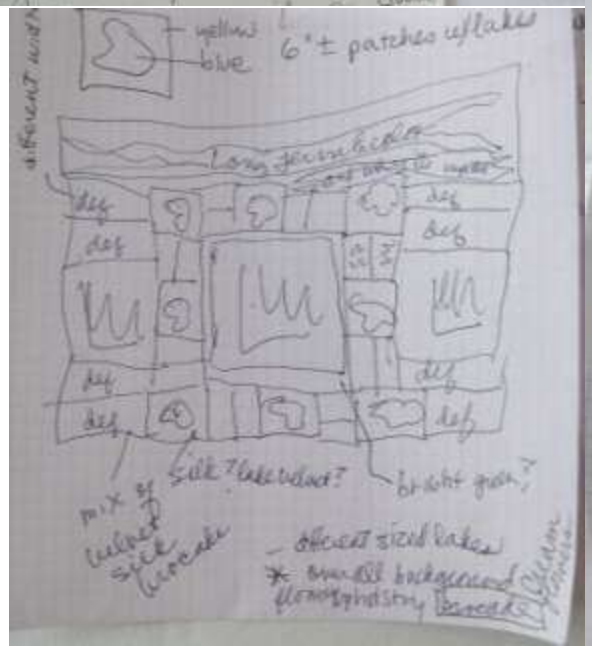


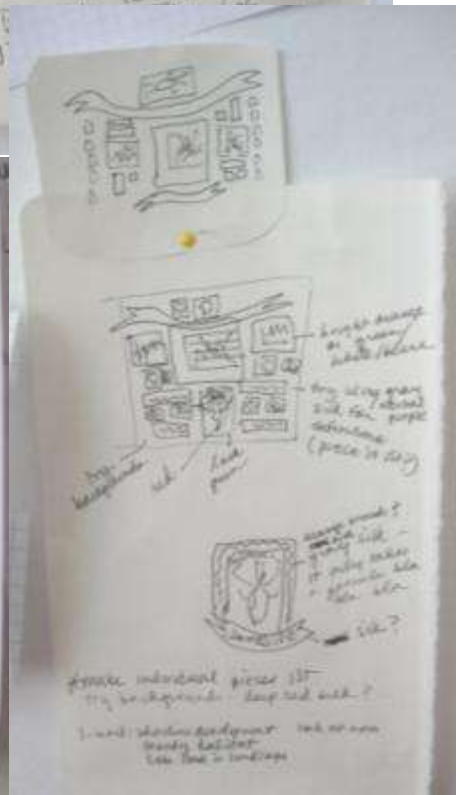



The Physical GEOGRAPHY of WISCONSIN
WINTER 2010

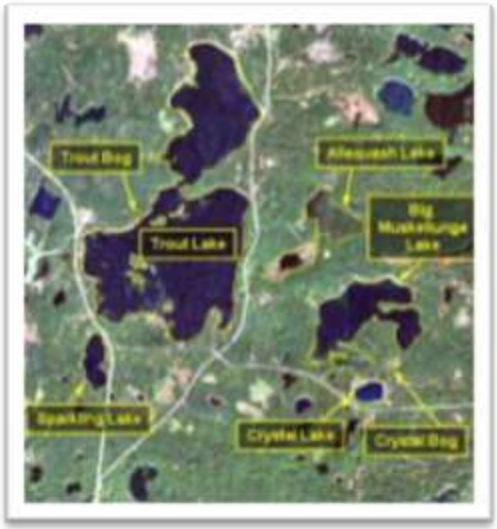








transfer isopheres), other graphics
Make plastic transp of Mendota etc
Outlines
LG graph - outline orange line/ball in black
- Strengthen other graph lines
thin Black or green velvet frames around
Some graphs -
On velvet background
Write w/ paint pen on graphs
Fill in crayfish w/ Red

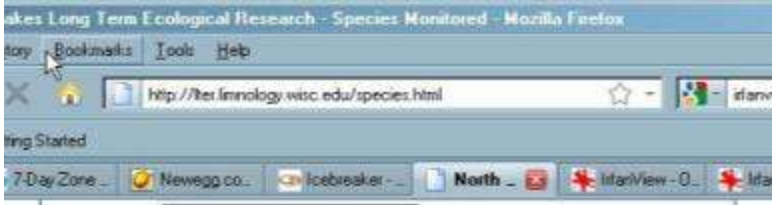


Characteristics of each lake, e.g.:

Sparkling Lake has 30 species of fish, 63 species of zooplankton and 34 species of macrophytes!

- Lake Wingra

Fish in ALLEQUASH LAKE	
Name in Database	**Scientific Name**
MUDMINNOW	Umbra limi
NORTHERNPIKE	Esox lucius
MUSKELLUNGE	Esox masquinongy
MUSKYPIKEHYBRID	Esox lucius X E. masquinongy
GRASSPICKEREL	Esox americanus
GOLDENSHINER	Notemigonus chrysoleucas
BLUNTNOSEMINNOW	Pimephales notatus
MIMICSHINER	Notropis volucellus
COMMONSHINER	Notropis cornutus
BLACKNOSESHINER	Notropis heterolepis
BLACKCHINSHINER	Notropis heterodon
ROSYFACESHINER	Notropis rubellus
HORNYHEADCHUB	Nocomis biguttatus
SPOTTAILSHINER	Notropis hudsonius
CREEKCHUB	Semotilus atromaculatus
FINESCALEDACE	Phoxinus neogaeus
WHITESUCKER	Catostomus commersoni
SHORTHEADREDHORS	Moxostoma macrolepidotum
YELLOWBULLHEAD	Ictalurus natalis
BLACKBULLHEAD	Ictalurus melas
BROWNBULLHEAD	Ictalurus nebulosus
BURBOT	Lota lota
BROOKSTICKLEBACK	Culaea inconstans
BLACKCRAPPIE	Pomoxis nigromaculatus
LARGEMOUTHBASS	Micropterus salmoides
SMALLMOUTHBASS	Micropterus dolomieui
ROCKBASS	Ambloplites rupestris
BLUEGILL	Lepomis macrochirus
PUMPKINSEED	Lepomis gibbosus
BGPUMPHYBRID	Lepomis gibbosus X L. macrochirus
GREENPUMPHYBRID	Lepomis cyanellus X L. gibbosus
GREENBGHYBRID	Lepomis cyanellus x L. macrochirus
YELLOWPERCH	Perca flavescens
WALLEYE	Sander vitreus



Fish in BIG MUSKULLENGE	
Name in Database	**Scientific Name**
CISCO	Coregonus artedii
NORTHERNPIKE	Esox lucius
MUSKELLUNGE	Esox masquinongy
MUSKYPIKEHYBRID	Esox lucius X E. masquinongy
GRASSPICKEREL	Esox americanus
GOLDENSHINER	Notemigonus chrysoleucas
BLUNTNOSEMINNOW	Pimephales notatus
MIMICSHINER	Notropis volucellus
COMMONSHINER	Notropis cornutus
BLACKNOSESHINER	Notropis heterolepis
BLACKCHINSHINER	Notropis heterodon
ROSYFACESHINER	Notropis rubellus
HORNYHEADCHUB	Nocomis biguttatus
WHITESUCKER	Catostomus commersoni
SHORTHEADREDHORS	Moxostoma macrolepidotum
YELLOWBULLHEAD	Ictalurus natalis
BLACKBULLHEAD	Ictalurus melas
BURBOT	Lota lota
BROOKSTICKLEBACK	Culaea inconstans
BLACKCRAPPIE	Pomoxis nigromaculatus
LARGEMOUTHBASS	Micropterus salmoides
SMALLMOUTHBASS	Micropterus dolomieui
ROCKBASS	Ambloplites rupestris
BLUEGILL	Lepomis macrochirus
PUMPKINSEED	Lepomis gibbosus
BGPUMPHYBRID	Lepomis gibbosus X L. macrochirus
GREENSUNFISH	Lepomis cyanellus
YELLOWPERCH	Perca flavescens
WALLEYE	Sander vitreus
LOGPERCH	Percina caprodes
JOHNNYDARTER	Etheostoma nigrum
IOWADARTER	Etheostoma exile
MOTTLEDSCULPIN	Cottus bairdi
SLIMYSCULPIN	Cottus cognatus

Fish in CRYSTAL BOG

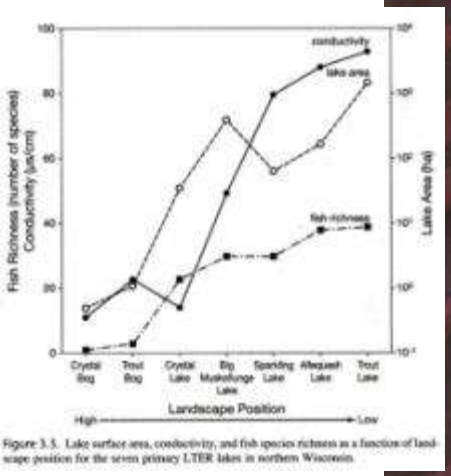


Figure 3.5. Lake surface area, conductivity, and fish species richness as a function of landscape position for the seven primary LTER lakes in northern Wisconsin.


25
20
15
10
5
0
40
20
0
native crayfish
adult bluegill
1980
1985
1990
1995
2000
2005

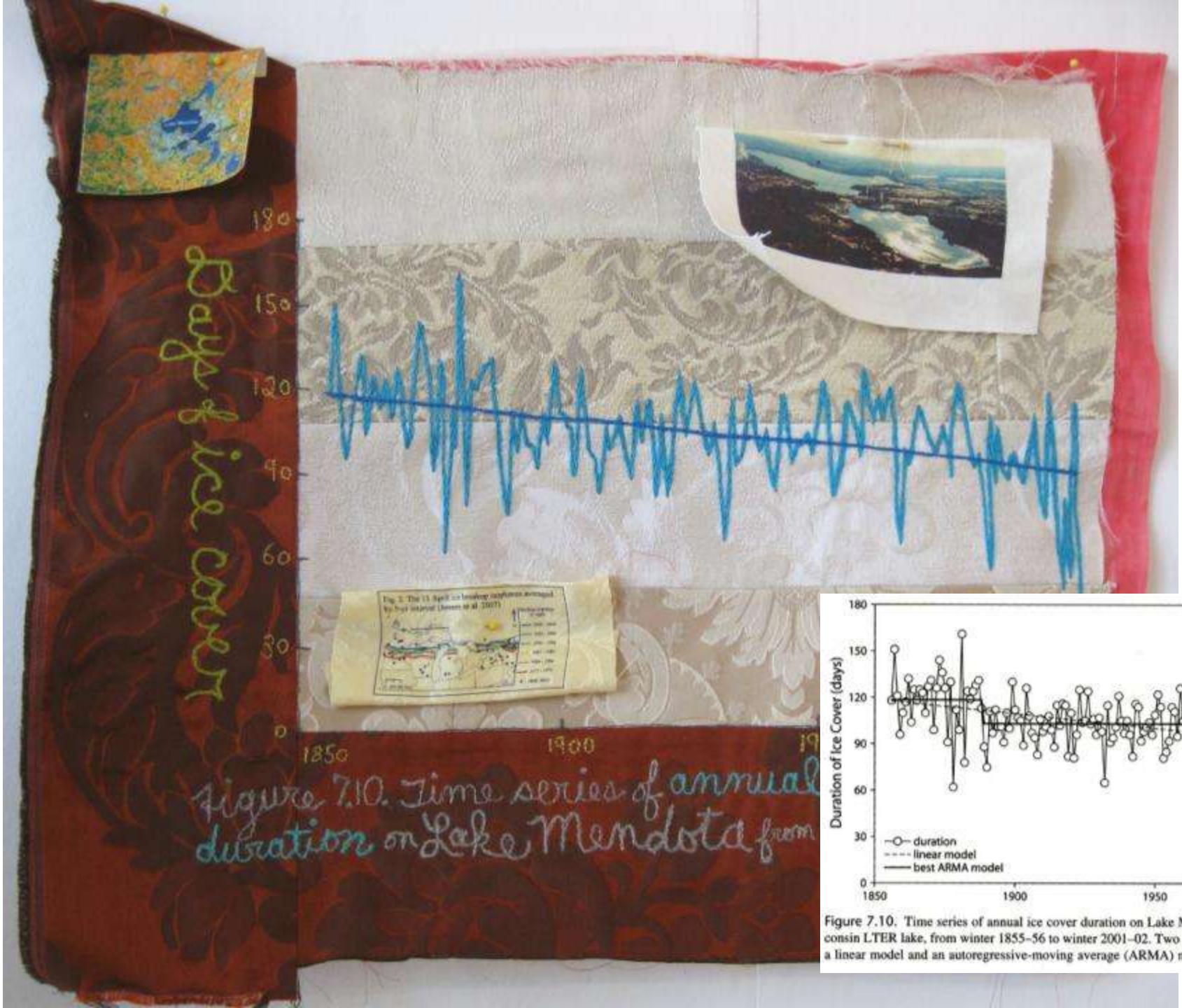


Figure 7.10. Time series of annual ice cover duration on Lake Mendota, a southern Wisconsin LTER lake, from winter 1855–56 to winter 2001–02. Two models are fit to the data, a linear model and an autoregressive-moving average (ARMA) model.

National Invasive Species Information Center - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.invasivespeciesinfo.gov/

invasive species

Most Visited Getting Started

Keweenawtr... Network Sol... WOOL00.0... weteben's Fa... 7-Day Zone... Newegg.co... Icebreaker -... North Tempe... Nation...

USDA United States Department of Agriculture
National Agricultural Library

NATIONAL INVASIVE SPECIES INFORMATION CENTER

Home | About NISIC | News and Events | Council | Help | Contact Us

Search NISIC

Go

- Search all USDA
- Advanced Search
- Search Tips

Browse by Geography

- United States
- International

Browse by Subject

- Aquatic Species
- Plants
- Animals
- Microbes
- Economic Impacts
- Laws and Regulations
- Manager's Tool Kit
- Resource Library

You are here: Home

National Invasive Species Information Center (NISIC): *Gateway to invasive species information; covering Federal, State, local, and international sources.*

In the News

More

NISIC's Featured News:

USDA and Russian Scientists Develop High-Tech Crop Map (Mar 10, 2011)

Scientists Find That Non-native Snakes Are Taking a Toll on Native Birds (Mar 10, 2011)

Nutria Videos Highlight Growing Problem (Mar 9, 2011)

Invasive Species Settlement: New Ballast Water Permit Should Help Protect American Coasts, Lakes and Rivers (Mar 8, 2011)

Stabenow and Great Lakes Advocates Join to Stop Asian Carp (Mar 6, 2011)

Pest Alert! Firewood: Threat From Invasive Beetles

What's New on NISIC's Site (all items):

- See **What's New** (recent items rotating below)
- Subscribe to **NISIC - What's New**

Michigan – 2011 Garlic Mustard Challenge

Current Invasive Species News (from various sources):

- Read **Invasive Species News**
- Subscribe to **Invasive Species News**

Spotlights

What's New **Email updates** available.

Calendar Invasive Species related Conferences

Interactive Learning Module Why are invasives a problem?

Education Invasive Species Resources for K-12 Students

SHARE

I Want To...

- See What's in My State
- Find Out What I Can Do
- What is an Invasive Species?
- Find Images
- Help to Control Invasive Species
- More ...

Agricultural Research Service's Research on Invasive Species

See Also

- National Invasive Species Council (NISC)

Media Help

To view PDF files you must have Adobe Acrobat Reader installed on your computer.

To view Flash files you must have Macromedia Flash Player installed on your computer.

Follow us on twitter!

Google Translate

Done

littoral zone - Google Search - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.google.com/search?q=littoral+zone&ie=utf-8&oe=utf-8&aq=t&rls=org.mozilla:en-US:official&cl

littoral zone

Most Visited Getting Started

Keweenawtr... Network Sol... W00L00 O... writebon's Fa... 7-Day Zone ... Newegg.co... Icebreaker - ... North Tempe... littoral ...

Web Images Videos Maps News Shopping Gmail more ▾ Sign in

Google littoral zone Search Instant is on ▾

About 807,000 results (0.05 seconds) Advanced search

Everything
Images
Videos
News
Shopping
Books
More

Houghton, MI
Change location

Any time
Latest
Past 24 hours
Past week
Past month
Past 3 months
Past year
Custom range...

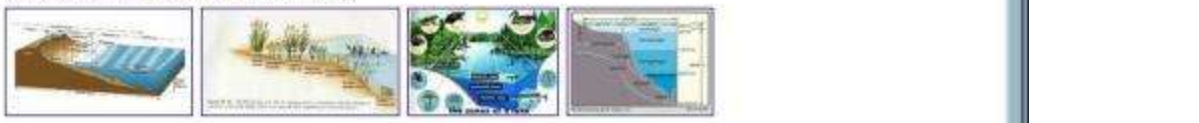
All results
Sites with images

More search tools

Something different
intertidal zone
water column
transition zone
estuary
riparian zone

Littoral zone - Wikipedia, the free encyclopedia
The **littoral zone** refers to that part of a sea, lake or river that is close to the shore. In coastal environments the **littoral zone** extends from the high ...
In oceanography and marine biology - Around lakes - Other definitions - See also
en.wikipedia.org/wiki/**Littoral_zone** - Cached - Similar

Images for **littoral zone** - Report images



Ocean Regions: **Littoral Zone** - Oceanography
The **littoral zone** is the part of the ocean closest to the shore. The **littoral zone** is from the shoreline to 600 feet (183 meters) out into the water and is ...
www.onr.navy.mil/focus/ocean/regions/**littoralzone**1.htm - Cached - Similar

littoral zone (marine ecology) -- Britannica Online Encyclopedia
littoral zone (marine ecology), marine ecological realm that experiences the effects of tidal and longshore currents and breaking waves to a depth of 5 to ...
www.britannica.com/EBchecked/topic/344269/**littoral-zone** - Cached - Similar

[PDF] Definition of the **Littoral Zone**
File Format: PDF/Adobe Acrobat - Quick View
Littoral Zone Vegetation Communities-Open Water ... -The **littoral zone** typically supports the largest and most diverse populations of invertebrates in a ...
www.minnehahacreek.org/documents/**LittoralZone**.pdf - Similar

Freshwater Ecosystems
Littoral zone. The zone close to shore. Here light reaches all the way to the bottom. The producers are plants rooted to the bottom and algae attached to ...
users.rcn.com/jkimball.ma.ultranet/.../F/Freshwater.html - Cached - Similar

OceanLink | Biodiversity - the intertidal
The Supra-**littoral Zone**. The size of this zone depends on slope, splash, climate, and amount of shade. This zone is only covered by water during the highest ...
www.oceanlink.info/biodiversity/intertidal/intertidal.html - Cached

Intertidal **Zone** Animals - EnchantedLearning.com
Intertidal **Zone** Animals - printouts on the animals that live in this inhospitable biome.
www.enchantedlearning.com/subjects/ocean/Intertidal.shtml - Cached - Similar

Intertidal **Zone** - Beachapedia
Jan 13, 2011 ... The intertidal zone (sometimes referred to as the **littoral zone**) is the area that is exposed to the air at low tide and underwater at high ...
www.beachapedia.org/Intertidal_**Zone** - Cached

The **littoral zone**: Australian contexts and their writers - Google Books Result

Done


Benthos: lake bottom
organisms living there
Eutrophication
a body of water
acquires a high concentration of
especially phosphates and nitrates
a Macrophyte is an aquatic plant
In lakes they serve as a nursery area
for larval fish and a habitat
for macroinvertibrates
Conductivity is directly related to the levels
of dissolved ions in the water. Conductivity levels
will generally increase if there is an increase in the
concentration of pollutants in the water.
Phenology


Riparian
Zone

1

2

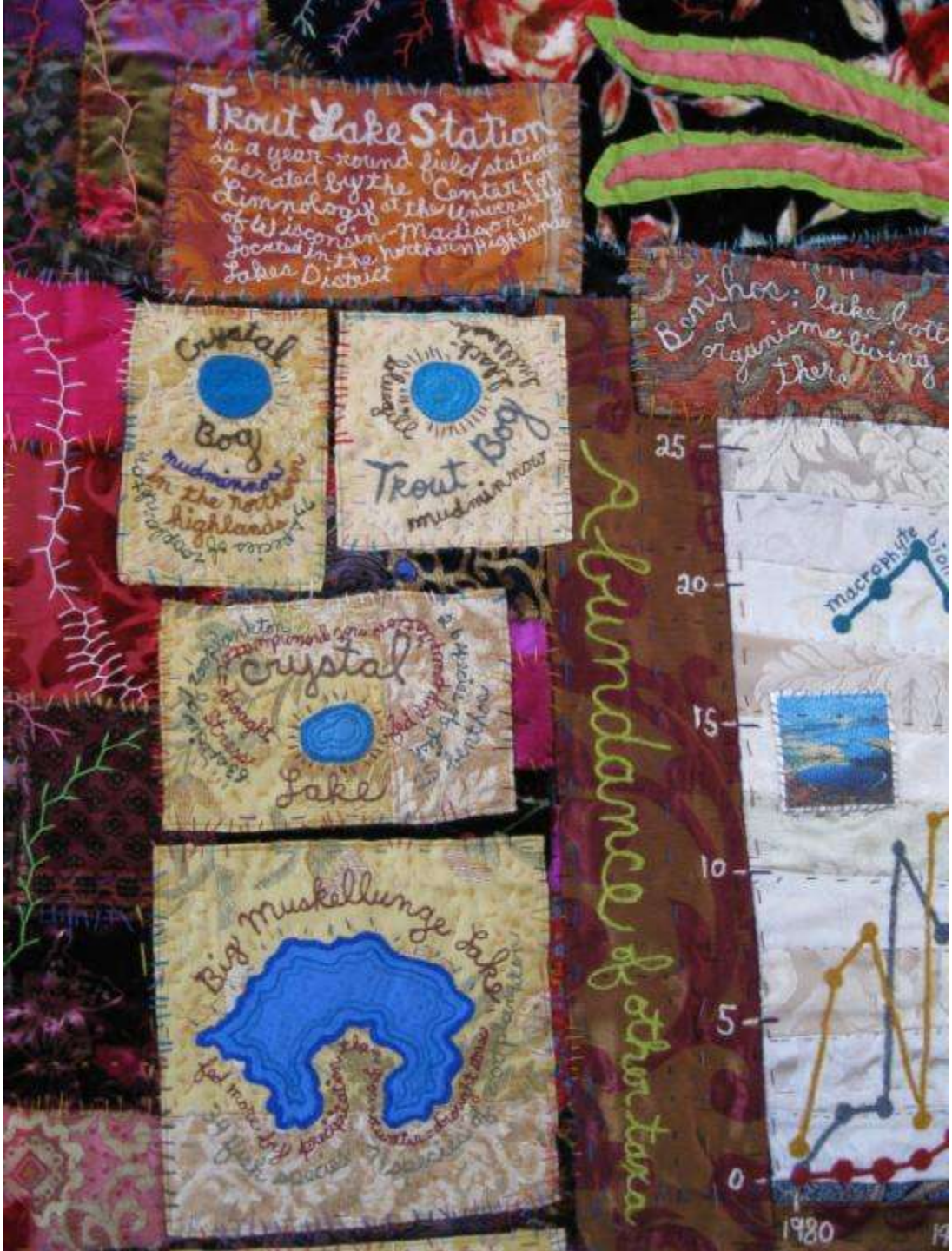
3

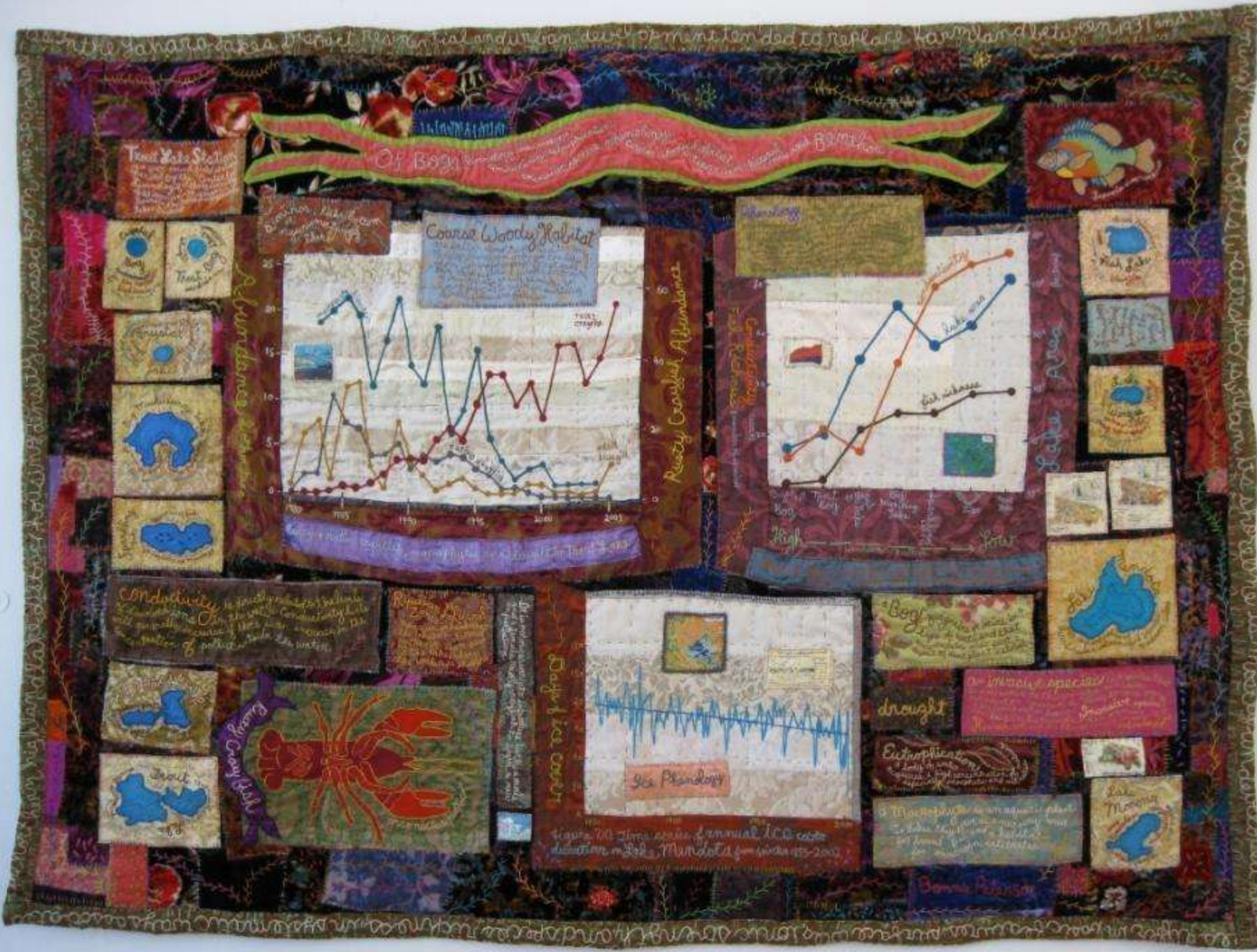
4

5

6


Of Bogs, limnology, macrophytes, conductivity, invasive
Benthos: lake bottom organisms living there
Coarse Woody Habi
are fallen dead trees and the
of large branches on and near the la
shore. Some fishes prefer to nest nea
CWH. CWH provides a surface for gro
of invertebrates as well as shelter for
young fishes. It is crucial for sustainin
desirable fishes and fisheries.
Aruna
25
20
macrophyte biomass


Trout Lake Station
is a year-round field station
operated by the Center for
Limnology at the University
of Wisconsin-Madison
located in the northern Highlands
Lakes District
Crystal
Bog
Trout
Bog
Crystal
Lake
Big Muskellunge Lake
Benthos: lake bott
of organisms living
there
Abundance of other taxa
25
20
15
10
5
0
1980


Of Bogs
Trout Lake Station
Course Woody Habitat
Rusty Crayfish Abundance
High
Low
Lake Area
Conductivity
Rusty Crayfish
Ice Phenology
drought
Eutrophication
Bog
Bonnie Peterson

Bonnie Peterson Home Page - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://bonniepeterson.com/

dane county farmers mark

Most Visited Getting Started

Bonnie Peterson embroidered textiles & maps

New work

Adventure series

Political series

Domestic series

Maps & Globes

Prayer Flag Installation

Contact

Home | New Work | Adventure Series | Political Series | Maps & Globes | Domestic Series | Resume Current shows | Artist statement | Photos | Contact | 5 min WTTW-Chicago Interview | Pecha Kucha at Martyrs-Chicago 6 min 40 sec

www.bonniepeterson.com

Done

WTTW - Inspired by Nature - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.wttw.com/main.taf?p=1,8,2,1,15

dane county farmers mark

Most Visited Getting Started

Power o... Woman Mad... WOOLOO.O... writebon's Fa... National We... 9x9x3 Box O... Dane County... Bonnie Peter... WTTW_

- Hidden Chicago 2
- Irish Chicago
- Image Union
- Mexico-One Plate
- McLaughlin Group
- Out & Proud
- Retirement Revolution
- Ride of Our Lives
- Soundstage
- Wild Chicago
- WordWorld
- CARRIER
- Frontline
- National Parks
- Power of the Poor
- The War

Bruce Guernsey
Distinguished Professor Emeritus
Eastern Illinois University
and Editor, *The Spoon River Poetry Review*
www.bruceguernsey.com

FELT INSPIRED

These aren't your grandmother's quilts. Elmhurst textile artist Bonnie Peterson documents her wilderness experiences through rich tapestries that bring the outdoors inside for all to see.

www.bonniepeterson.com

Art + Science!

1. Take a trip out to nature (lake, forest, back yard, almost anywhere!)

--What do you see? What captured your curiosity or imagination? What is important to you? What images or activities matter to you?

--Make sketches, take notes and photos while you're there

2. When you get home,

--Research your topic(s) in depth using the internet or a library. Follow links to new web pages. Look for graphs, definitions, data, maps, old journals, historical references, etc. Try to use more than one different website or database, such as:

--National Agriculture Library, invasive species link: http://www.invasivespeciesinfo.gov/

--NOAA: http://www.noaa.gov/

--UW Limnology Dept, Regional Lake info: http://limnology.wisc.edu/Lake_Information.php

--wikipedia

--LTER Network: http://www.lternet.edu/

--WI climatology: http://www.aos.wisc.edu/~sco/seasons/summer.html

--Dictionary of WI history: http://www.wisconsinhistory.org/dictionary/

--WI Maps link: http://www.sco.wisc.edu/maps/historical.php

3. Make small drawings of your project or use a journal to record project ideas

--Try to use both drawings/graphs/photos and text

--Start small! A journal incorporating field observations, photos and scientific info, could be the start!