

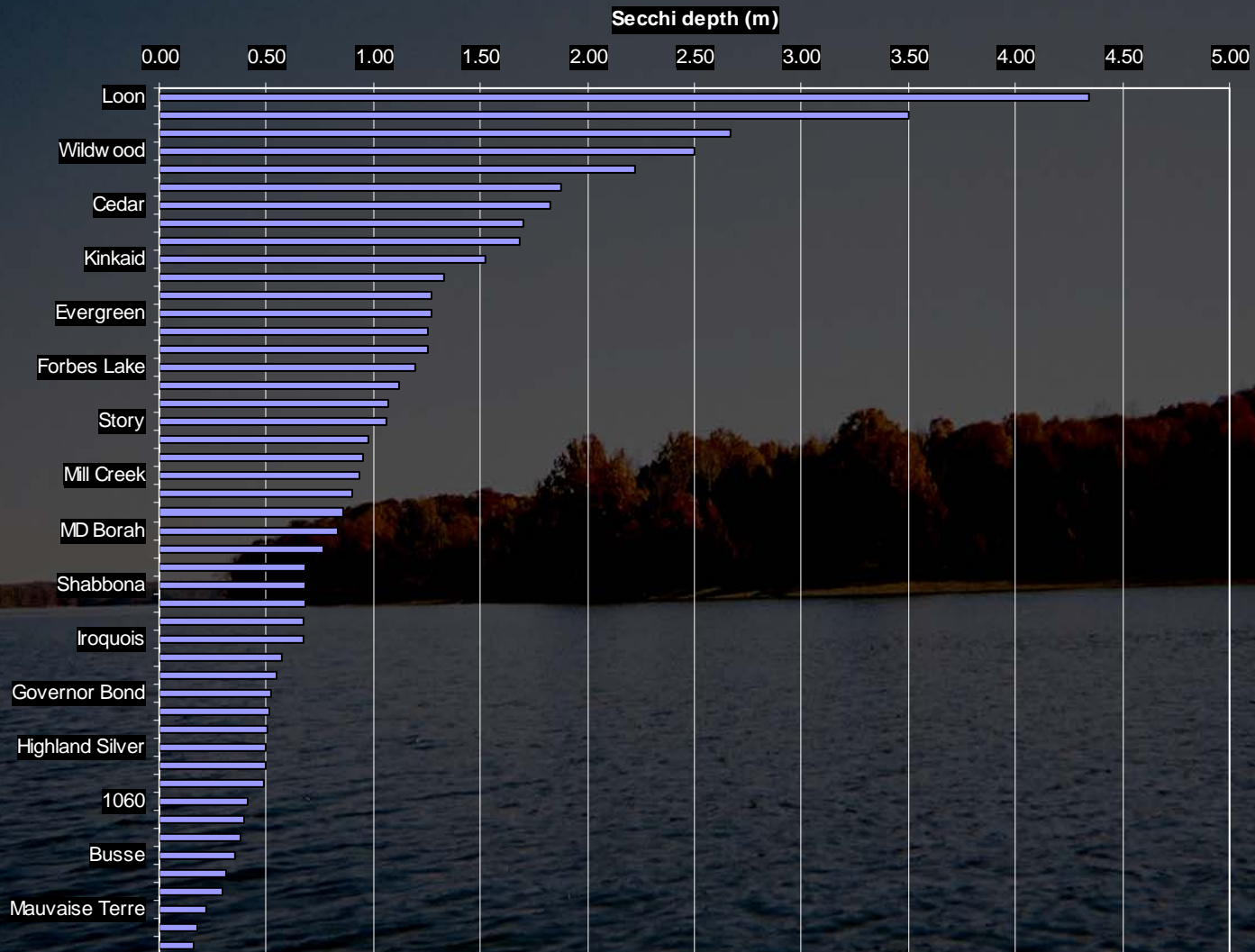
*Survey of Public Perception
Regarding the Integrity of
Illinois Lakes and Reservoirs*

Charles Pederson, Laurie Nannini and Tanya Stearney
Department of Biological Sciences,
Eastern Illinois University,
Charleston, Illinois, USA, 61920

ILMA 2009 – Peoria, IL



What is the reference condition for lake quality?



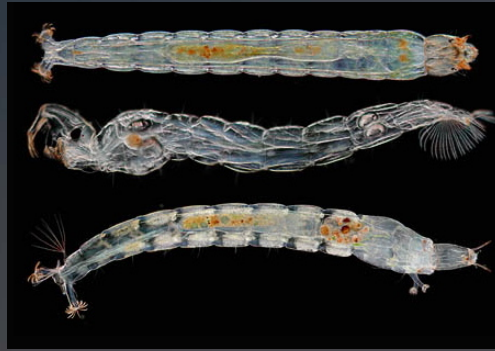
data from 2007 IEPA/USEPA sponsored survey of 49 Illinois Lakes

Trophic Integrity....

Secchi disc transparency
vertical profile (DO, temperature, pH)
depth-integrated sample (upper 2 m) at index station for water chemistry
surface water sample for supplemental study



Ecological Integrity....

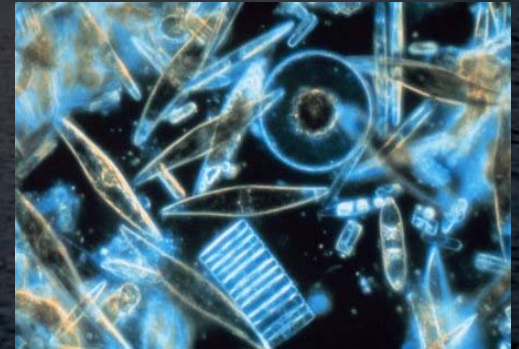
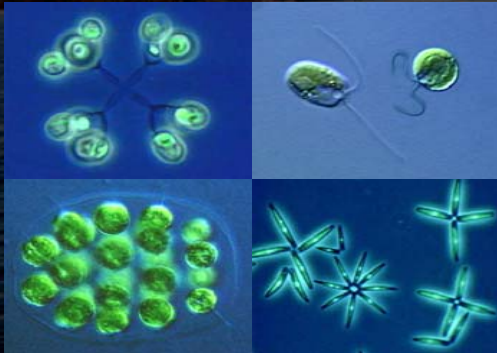


**Shoreline Physical Habitat Survey
Macrobenthos assemblage**

Zooplankton community (composition and structure, size distribution)

Phytoplankton community (composition and structure)

Sediment diatoms and sediment mercury

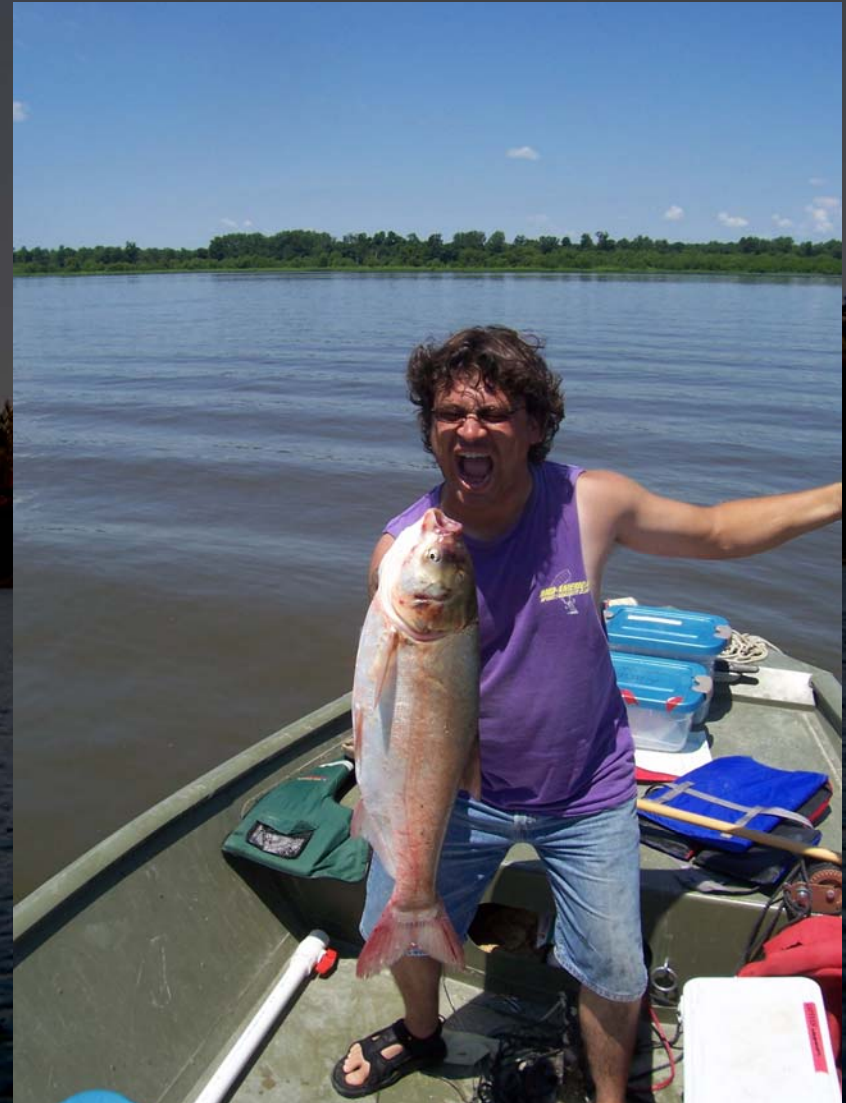


Recreational indicators

pathogen indicator organisms (enterococci)
algal toxins

Other indicators

characteristics of watershed
basin morphometry
surface area
exotic species



What is a “good lake”?

Reference conditions may not be well defined:

- Physical, chemical and biological data are multivariate
 - No single lake/reservoir may best define “reference”
 - Indicators may be interrelated
 - exotic species like zebra mussels may enhance water clarity
- Watershed features may be equally important
 - Land use (agriculture, urban)
 - Land cover (forested, mixed grass, cropland, pavement)
- May require best professional judgement
 - Earliest designation of a lake as eutrophic based on observation
- May be facilitated by incorporating public perception
 - Survey data of public perception
 - Sociological rather than biological
 - The “Good Lake” survey of 2008 ILMA conference attendees

What is a “good lake”?

Reference conditions may not be well defined:

- Physical, chemical and biological data are multivariate
 - No single lake/reservoir may best define “reference”
 - Indicators may be interrelated
 - exotic species like zebra mussels may enhance water clarity
- Watershed features may be equally important
 - Land use (agriculture, urban)
 - Land cover (forested, mixed grass, cropland, pavement)
- May require best professional judgement
 - Earliest designation of a lake as eutrophic based on observation
- May be facilitated by incorporating public perception
 - Survey data of public perception
 - Sociological rather than biological
 - The “Good Lake” survey of 2008 ILMA conference attendees

What is a “good lake”?

Reference conditions may not be well defined:

- Physical, chemical and biological data are multivariate
 - No single lake/reservoir may best define “reference”
 - Indicators may be interrelated
 - exotic species like zebra mussels may enhance water clarity
- Watershed features may be equally important
 - Land use (agriculture, urban)
 - Land cover (forested, mixed grass, cropland, pavement)
- May require best professional judgement
 - Earliest designation of a lake as eutrophic based on observation
- May be facilitated by incorporating public perception
 - Survey data of public perception
 - Sociological rather than biological
 - The “Good Lake” survey of 2008 ILMA conference attendees

What is a “good lake”?

Reference conditions may not be well defined:

- Physical, chemical and biological data are multivariate
 - No single lake/reservoir may best define “reference”
 - Indicators may be interrelated
 - exotic species like zebra mussels may enhance water clarity
- Watershed features may be equally important
 - Land use (agriculture, urban)
 - Land cover (forested, mixed grass, cropland, pavement)
- May require best professional judgement
 - Earliest designation of a lake as eutrophic based on observation
- May be facilitated by incorporating public perception
 - Survey data of public perception
 - Sociological rather than biological
 - The “Good Lake” survey of 2008 ILMA conference attendees...

The “Good Lake” survey

Demographics

Age
Gender
Marital status
Income
Education

Residential characteristics

County
Description of primary residence
Land use (urban, suburban, rural)
Primary residence lake front?
Secondary residence?
Lake front?

Lake use

Lakes most frequently used
visits per year
distance traveled
condition?

Use of lake based on restrictions
Relative importance of recreational opportunities
Relative importance of facilities
Perception of greatest threats to overall lake integrity

Survey Respondents

60 responses

Average age = 52years

43 male, 15 female, 2 “other”

48 married, 8 single, 4 “other”

52 of 60 reported annual income >\$50,000/ann.

54 to receive tax cut under Obama

40 have earned Bachelor’s or higher degree

Use of Lake Based on Restrictions

utilize regardless

1.00

No-wake (zones) 1.09
Fishing restrictions (creel, min. length, or slot limits) 1.11
Motor size restrictions 1.21
No-wake (timed) 1.23
No access zones 1.42
No-wake (entire lake) 1.51
Fish consumption advisories (mercury, pesticides) 1.58
Occasional swimming beach closures 1.65
Motors prohibited 1.74

may use/
seek alternative

2.00

Relative Importance of Recreational Activities

extremely important

1.00

Fishing (bank) 1.67
Fishing (boat) 1.74
Pleasure boating 1.74
Picnicking 1.77
Hiking 1.88

somewhat important

2.00

Swimming 2.09
Canoeing/Kayaking 2.19
Water Skiing, Tubing, Knee-boarding 2.58
Activities on a beach 2.60
Camping 2.63
Bird watching 2.67
Sailing 2.79
Fishing (ice) 2.88

not very important

3.00

Ice skating 3.20
Jet-skiing or Personal watercraft 3.23
Hunting (waterfowl) 3.39
Scuba 3.44
Wind surfing 3.53

Relative Importance of Facilities

extremely important

1.00

Boat ramp (concrete or asphalt) 1.57

Modern restroom facilities .62

Picnic areas/shelters 1.69

Maintained hiking trails 1.93

somewhat important

2.00

Boat ramp (unimproved) 2.09

Fishing pier 2.14

Maintained swimming beach 2.29

Marina (boat slips, fuel) 2.47

Modern campgrounds (water, electrical, sewer) 2.48

Shoreline concessions (beverages, food) 2.62

Primitive campgrounds 2.64

Shoreline concessions (bait, fishing gear) 2.69

not very important

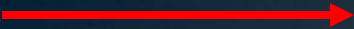
3.00

Shoreline concessions (boat rental, canoe rental) 2.78

Perception of Greatest Threats to Overall Lake Integrity


extreme threat

1.00

- 
- Nutrient (phosphorus, nitrogen) inputs 1.18
 - Sediment import from watershed and/or loss of lake volume 1.21
 - Sediment contamination 1.23
 - Shoreline erosion 1.26
 - Aquatic habitat destruction 1.32
 - Exotic plants and animals 1.33
 - Algal blooms 1.38
 - Septic contamination 1.39
 - Loss of native aquatic plants/animals 1.44
 - Agriculture (livestock operations) within the watershed 1.49
 - Agriculture (cropland) within the watershed 1.58
 - Shoreline development 1.59
 - Litter and debris 1.61
 - Decreased water clarity 1.63
 - Urbanization or industrialization within the watershed 1.70
 - Fish die-off (summer or winter) 1.81
 - Chemical treatments/over-management of the lake/reservoir 1.82
 - Excessive boating activities 1.82
 - Highway/road maintenance in the watershed 1.86

somewhat of a threat

2.00

- 
- Mining activities within the watershed 2.07
 - Forest harvest within the watershed 2.21
 - Aquaculture operations within the watershed 2.31
 - Marina operations 2.33

Acknowledgements

Funding

**Eastern Illinois University Biological Sciences Department
EIU Master's of Science/Natural Sciences Program**

Logistical Support

**Illinois Lake Management Board of Directors
Illinois Lake Management Membership**