The Influence of Lower Trophic Levels on Fisheries: Possible Elements of a Fact Sheet

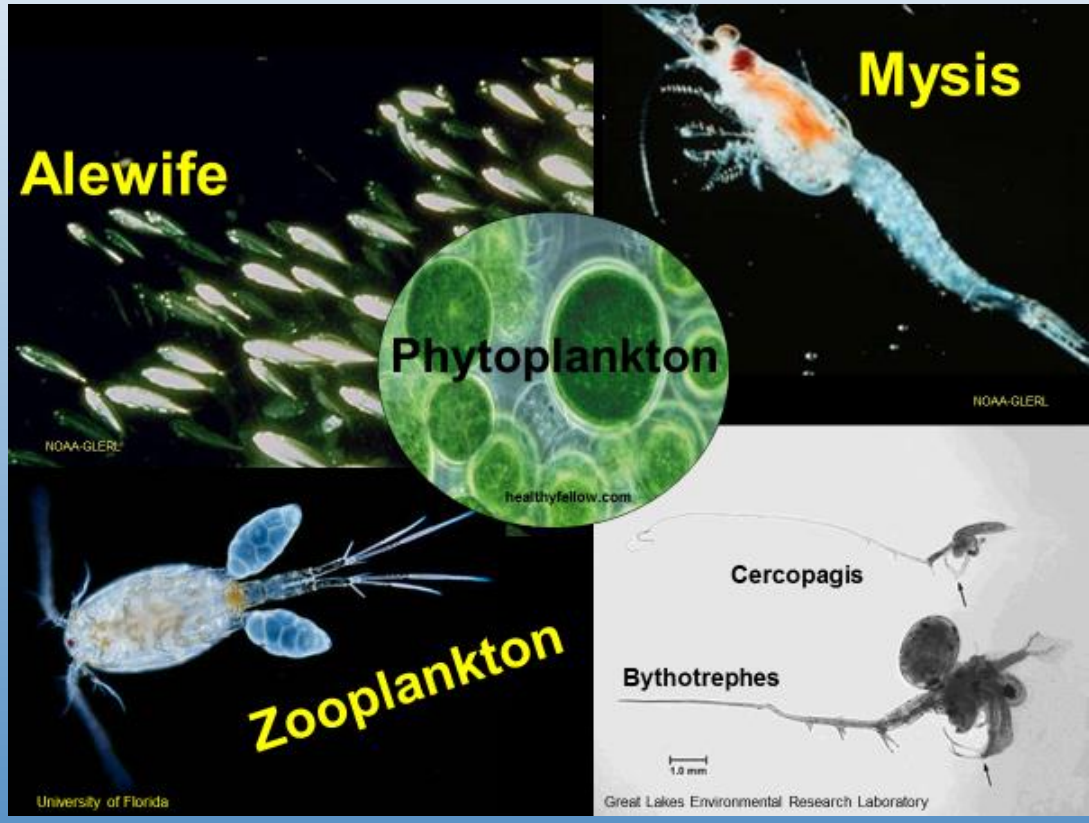
Tom Stewart

Council of Lake Committees Meeting, Detroit, Michigan, October 15, 2018

Background

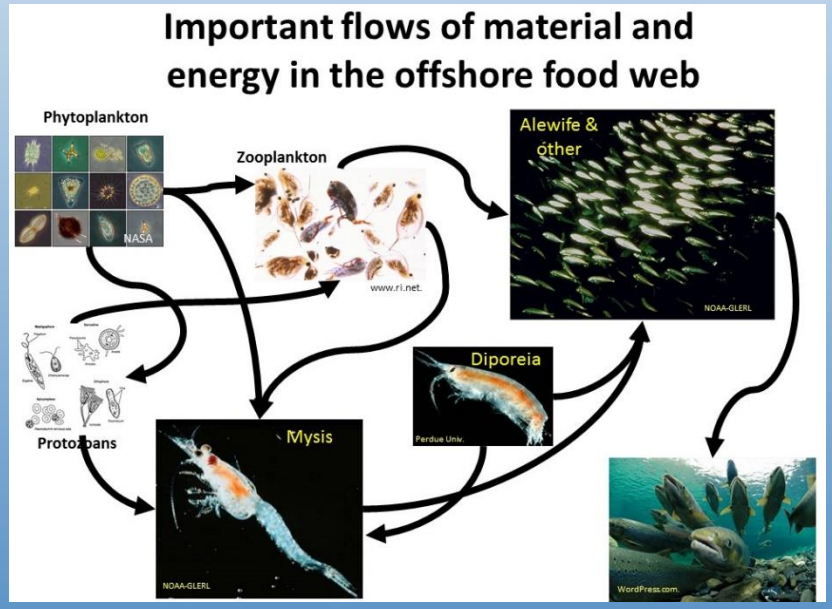
At the spring CLC meeting a conceptual model of fisheries management implications of LTL changes was presented and discussed by CLC

Follow-up was to bring to the fall CLC meeting a prototype fact sheet using Lake Huron as an example.



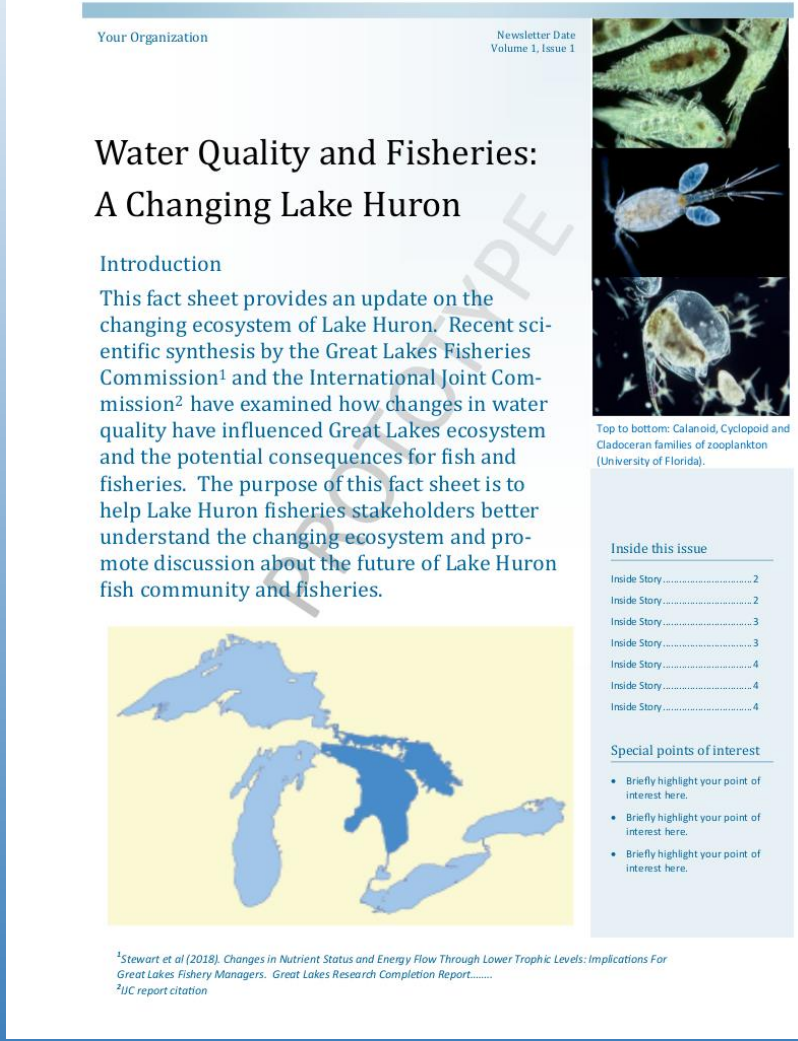
Objectives

- Review the fact sheet in your briefing book
- Discussion
  - Issues
  - Audience for fact sheet
  - Content and format
  - Next steps & process



Key Elements

- Phosphorus declines in LH are reducing total fish biomass potential
- The trophic transfer efficiency of the LH food web is low
- The food web has been disrupted and primary production is not getting effectively channeled to top predators and other species of interest
- Increased water clarity is an additional ubiquitous influence but difficult to fully understand



Your Organization

Newsletter Date
Volume 1, Issue 1

Water Quality and Fisheries: A Changing Lake Huron

Introduction

This fact sheet provides an update on the changing ecosystem of Lake Huron. Recent scientific synthesis by the Great Lakes Fisheries Commission[1] and the International Joint Commission[2] have examined how changes in water quality have influenced Great Lakes ecosystem and the potential consequences for fish and fisheries. The purpose of this fact sheet is to help Lake Huron fisheries stakeholders better understand the changing ecosystem and promote discussion about the future of Lake Huron fish community and fisheries.

PROTOTYPE

Top to bottom: Calanoid, Cyclopoid and Cladoceran families of zooplankton (University of Florida).

Inside this issue

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Inside Story 4

Special points of interest

- Briefly highlight your point of interest here.
- Briefly highlight your point of interest here.
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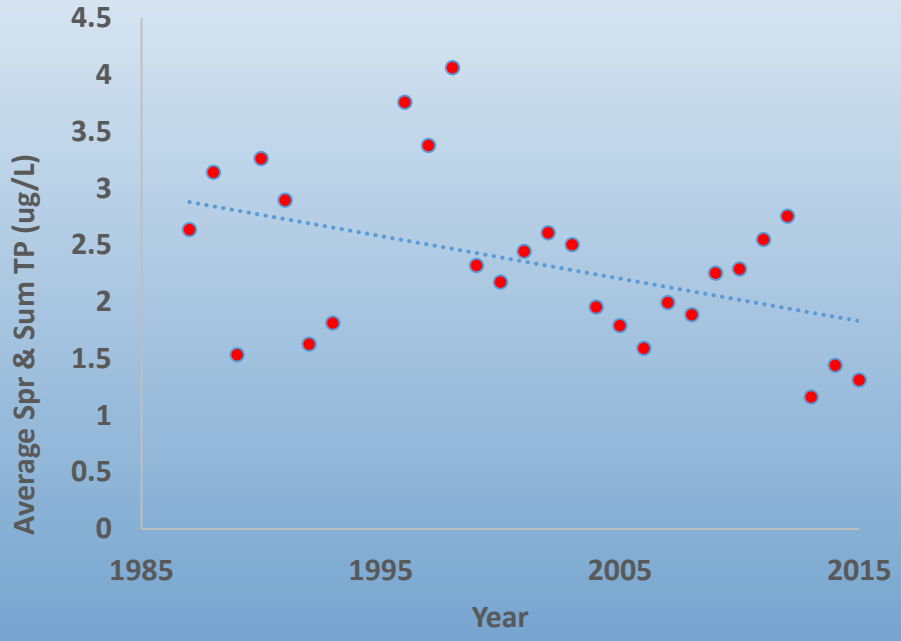
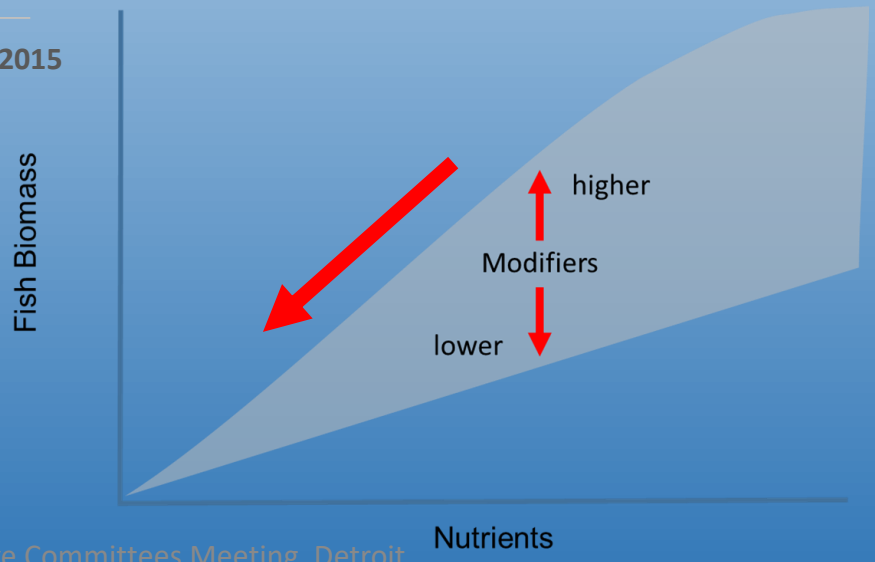
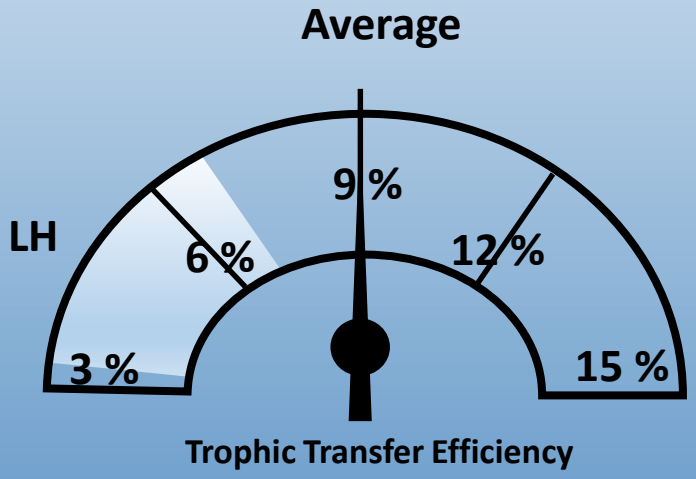
[1] *Stewart et al (2018). Changes in Nutrient Status and Energy Flow Through Lower Trophic Levels: Implications For Great Lakes Fishery Managers. Great Lakes Research Completion Report.....*
[2] *IJC report citation*

Phosphorus declines in LH are reducing total fish biomass potential





The trophic transfer efficiency of the LH food web is low



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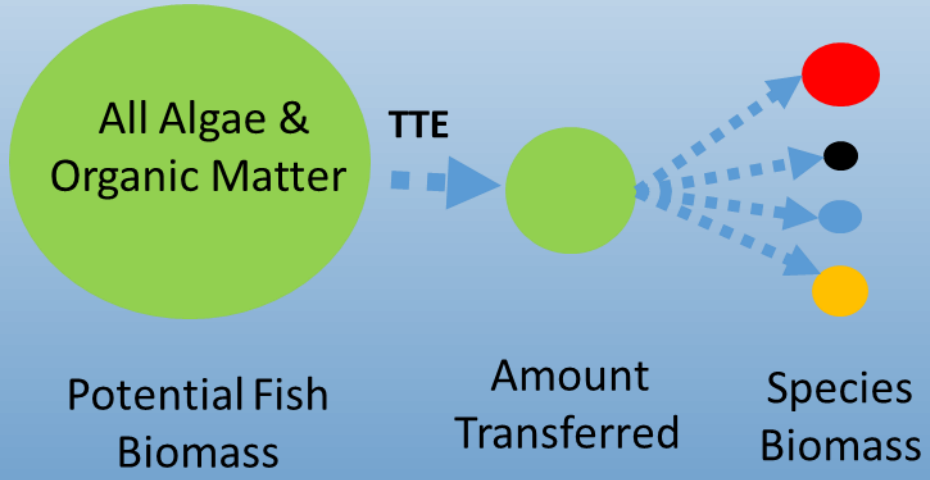

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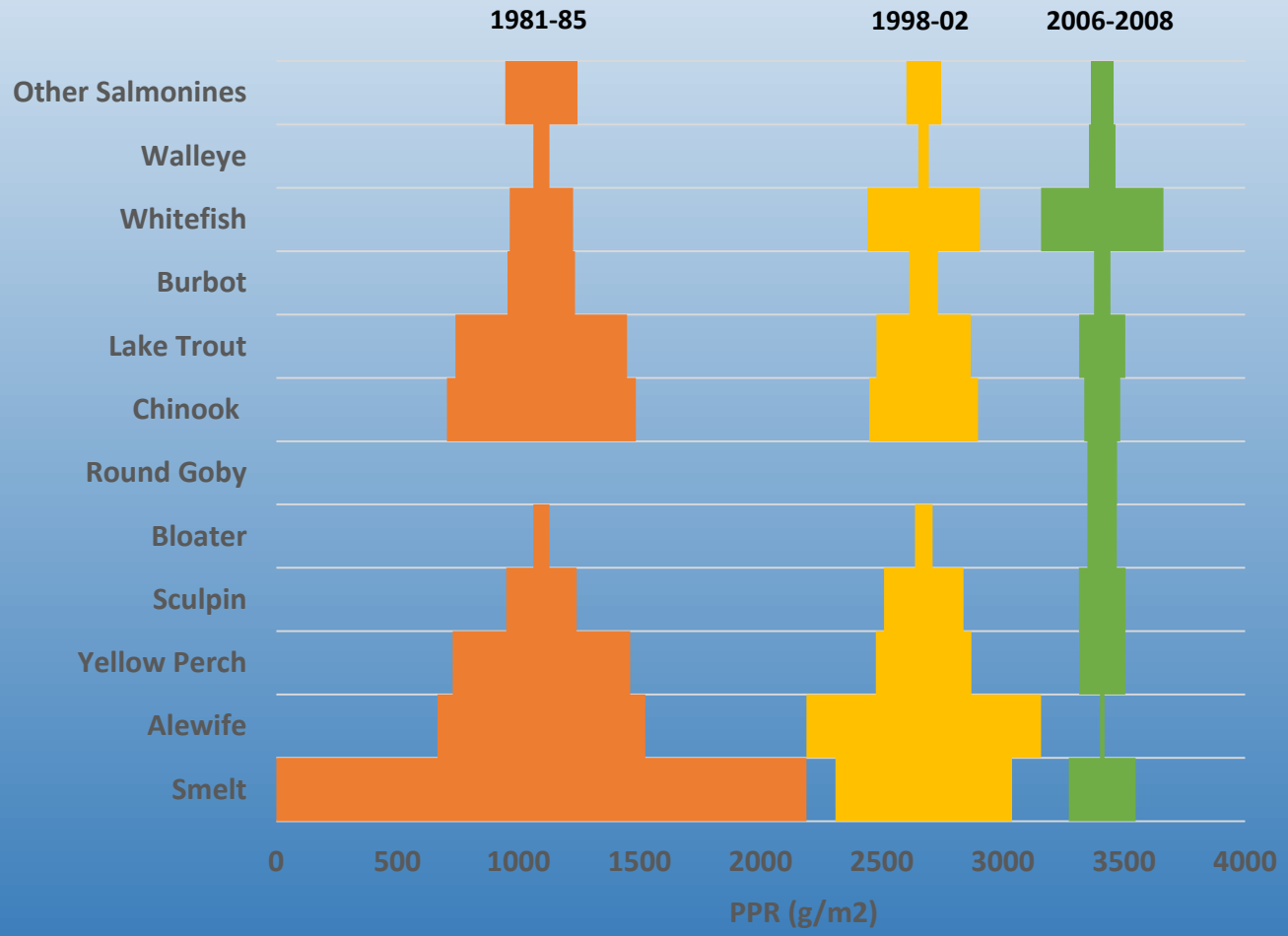

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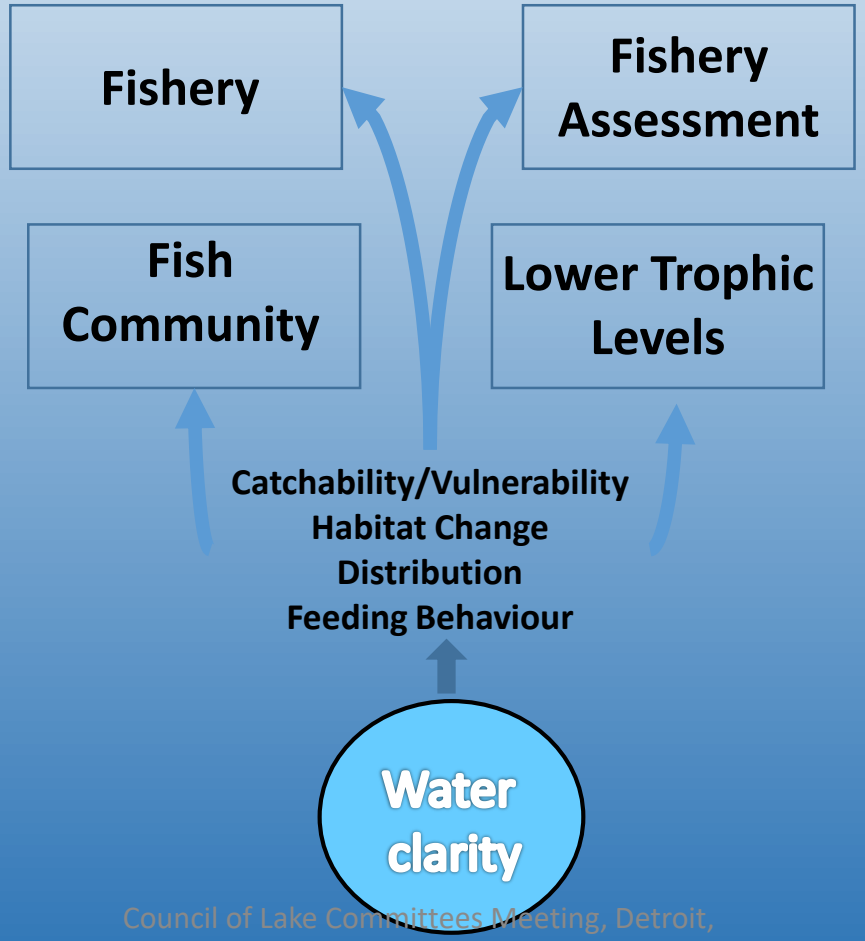
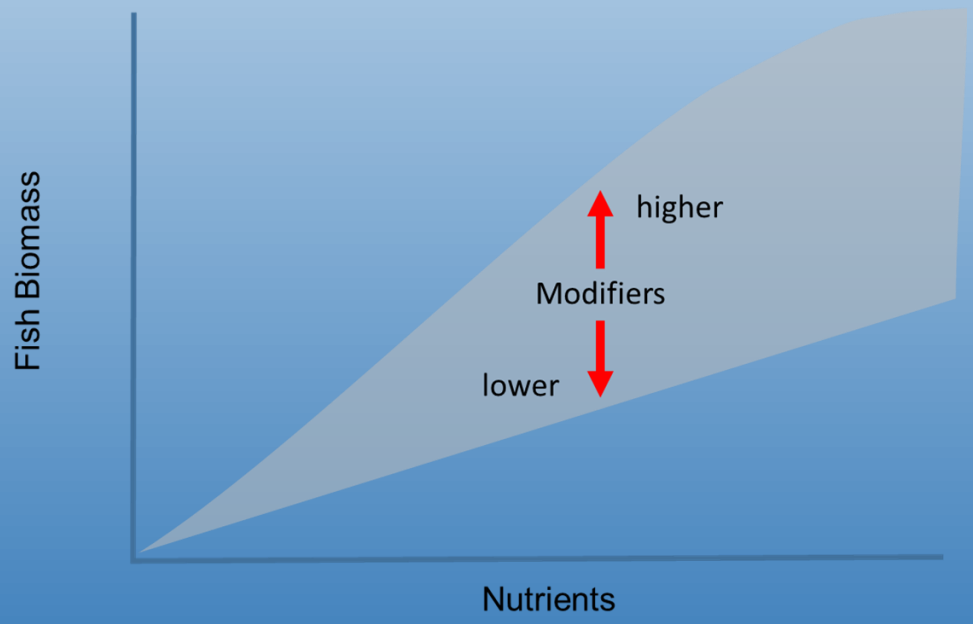


Fisheries managers can influence future outcomes How?

(LH Committee, Partners & Stakeholders)

- Manage to re-establish a prey fish base
- Manage fisheries more conservatively
- Stock fish more conservatively
- Maintain critical fish habitat
- Educate stakeholders (change expectations)
- Maintain sea lamprey control



Discussion

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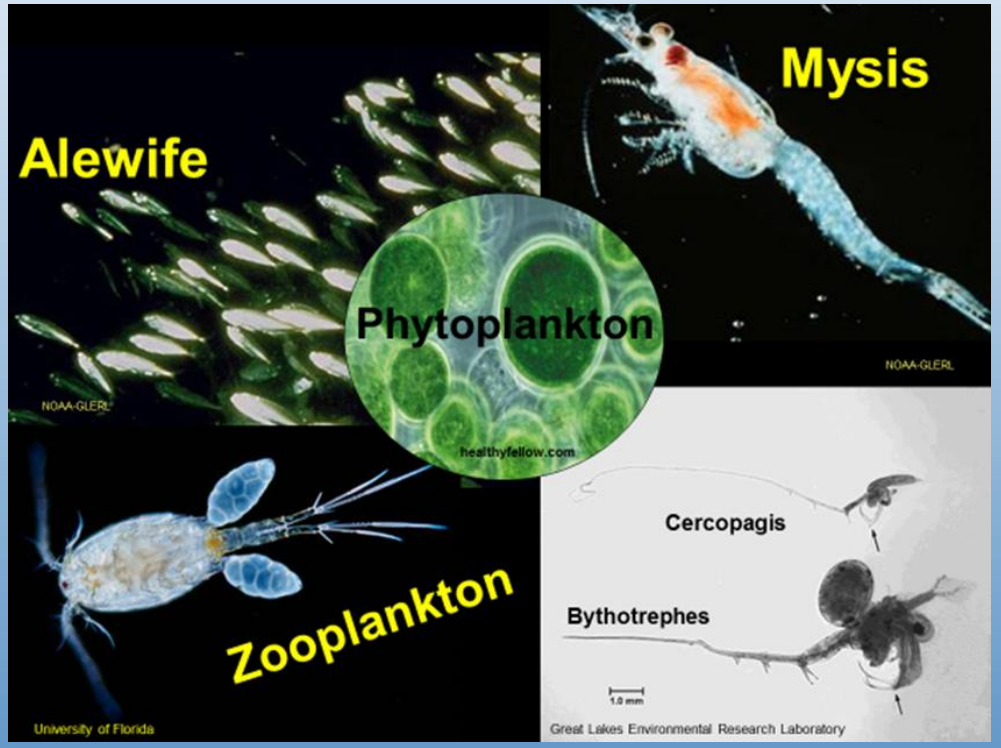
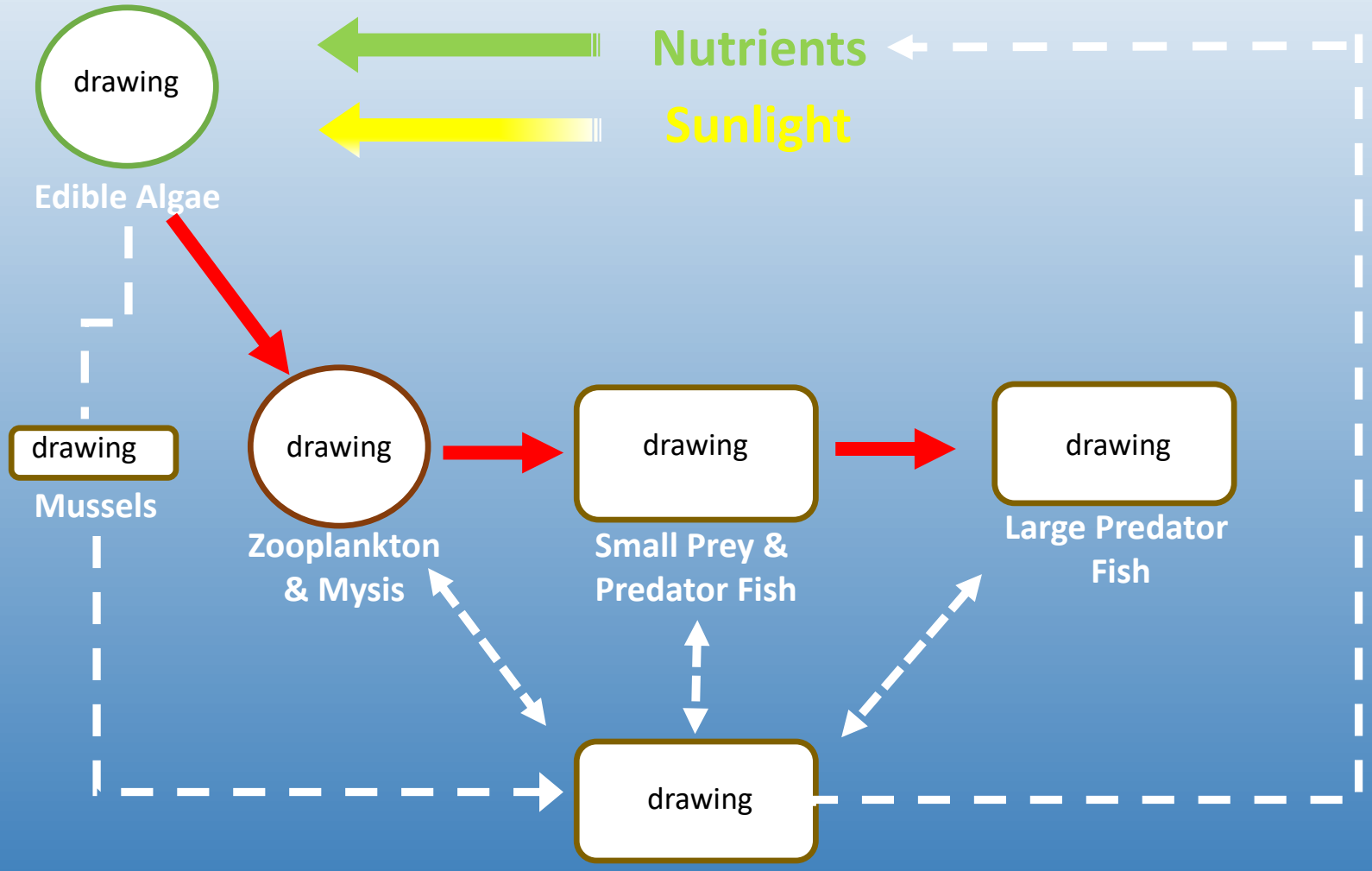
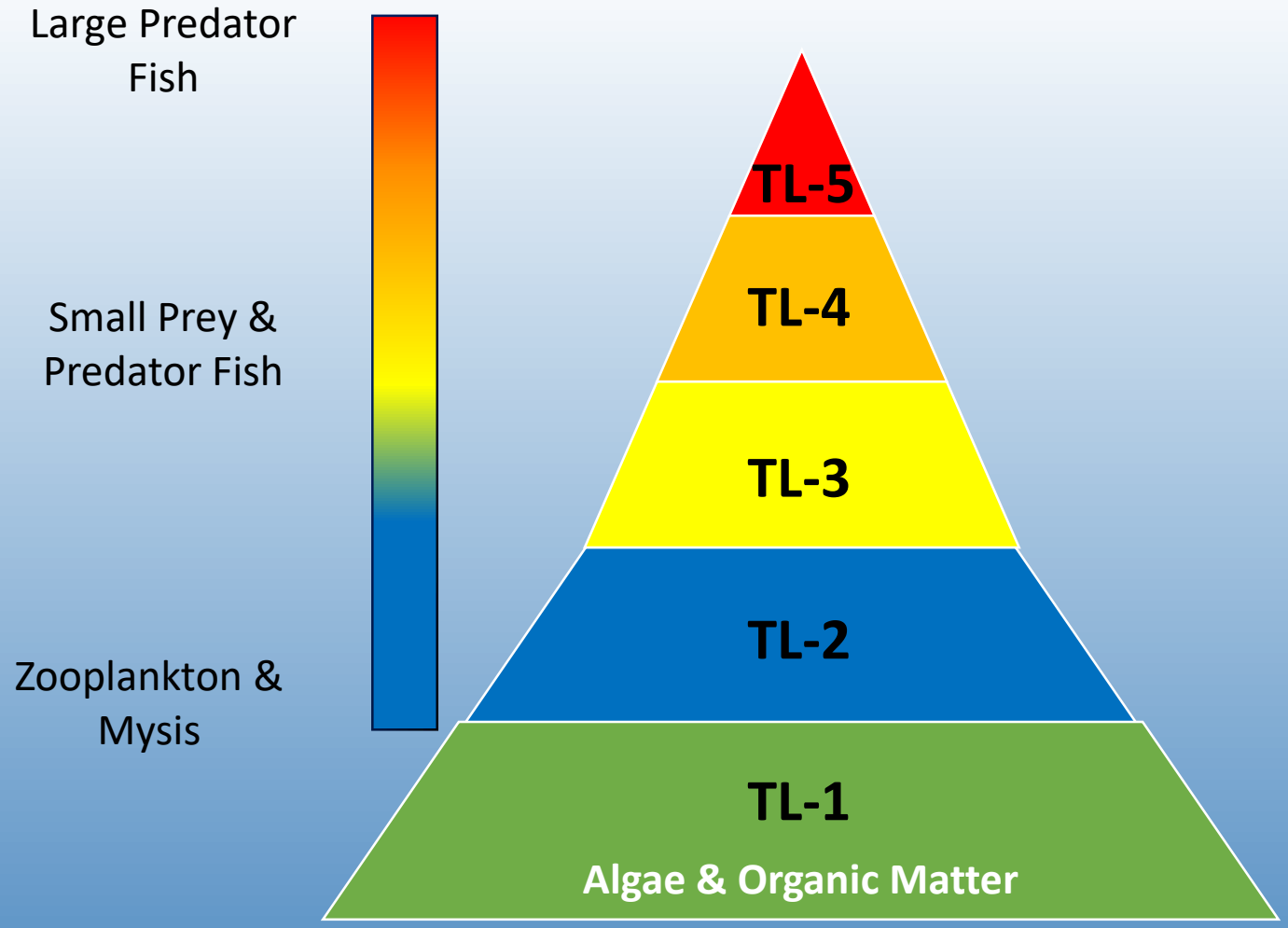


Hip Pocket Slides


drawing
Nutrients
Sunlight
Edible Algae
drawing
Mussels
drawing
Zooplankton & Mysis
drawing
Small Prey & Predator Fish
drawing
Large Predator Fish
drawing
Bottom Fish, Organisms & Organic Matter


Large Predator Fish
Small Prey & Predator Fish
Zooplankton & Mysis
TL-5
TL-4
TL-3
TL-2
TL-1
Algae & Organic Matter