

# **AQUATIC ECOSYSTEMS**

**EMPHASIS ON FOOD WEBS**

**STEVE HANSON, MS FISHERIES**

**PLM LAKE & LAND MANAGEMENT**



# TYPES OF LAKES

- VARIETY OF LAKE TYPES BY FORMATION

KETTLE LAKES



IMPOUNDMENT



# TYPES OF LAKES

- **VARIETY OF LAKE TYPES BY SIZE, MORPHOMETRY & OTHER CHARACTERISTICS**



# **GENERAL LAKE DEFINITION**

- **STANDING BODY OF WATER INCLUDING ITS UNDERLYING SEDIMENTS, THE AVAILABLE NUTRIENTS AND THE BIOLOGICAL LIFE.**
- **PROCESSES AT WORK WITHIN LAKES**

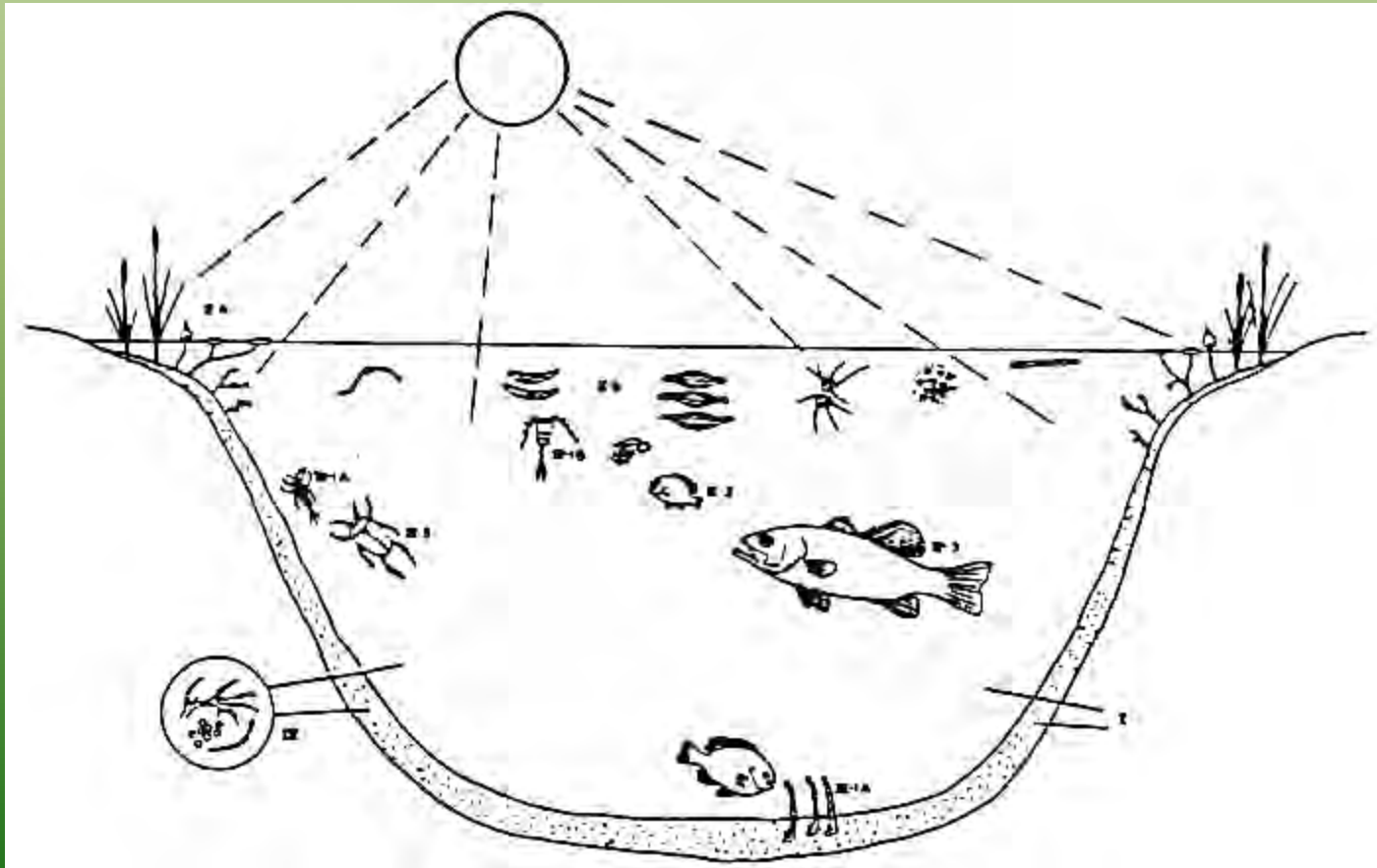
# **PROCESSES AT WORK**

- **SOLAR ENERGY – ONLY SOURCE OF ENERGY TO LAKES**
- **LAKE CHEMISTRY**
- **STRATIFICATION AND WATER MOVEMENT**
- **BIOLOGICAL ACTIVITY**

**ALL PROCESSES ARE LINKED**

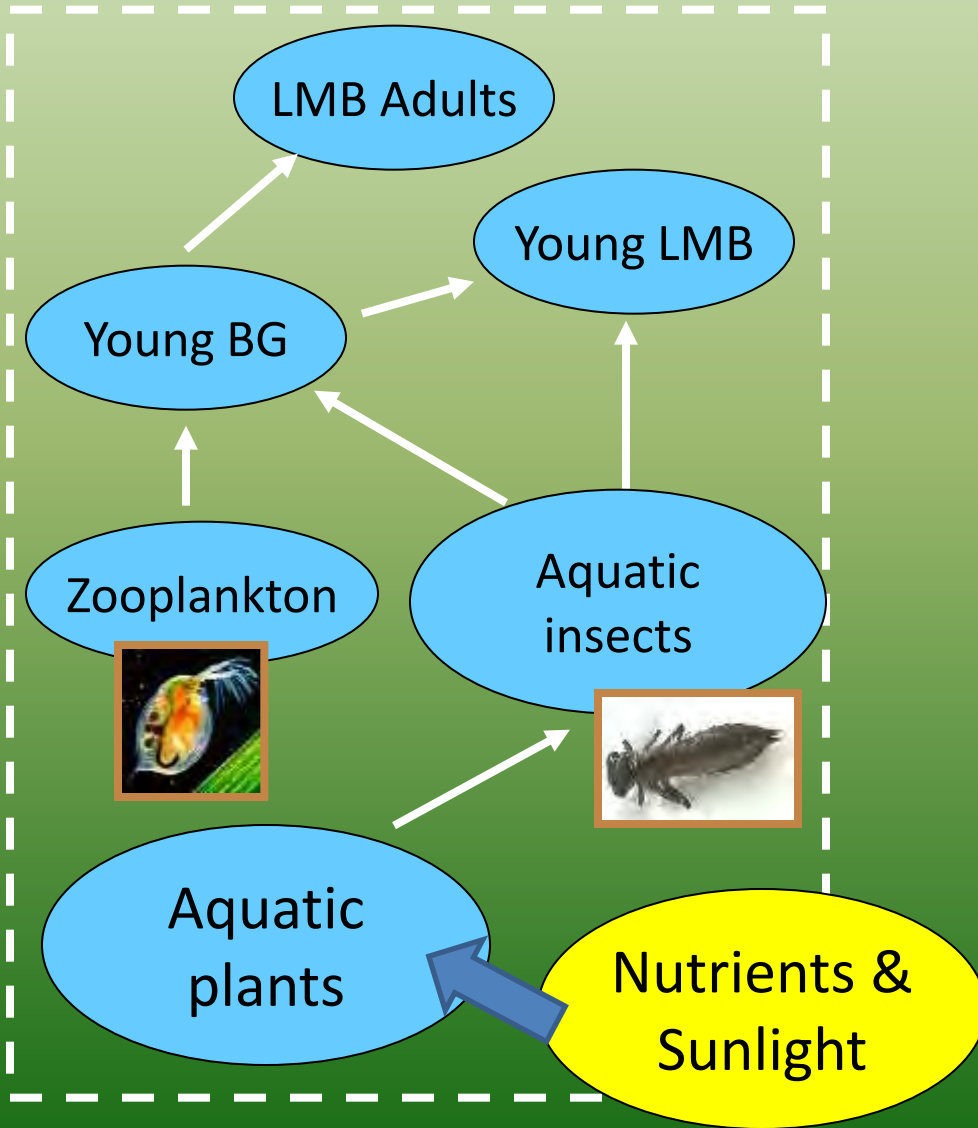


# FOOD WEB INTERACTIONS



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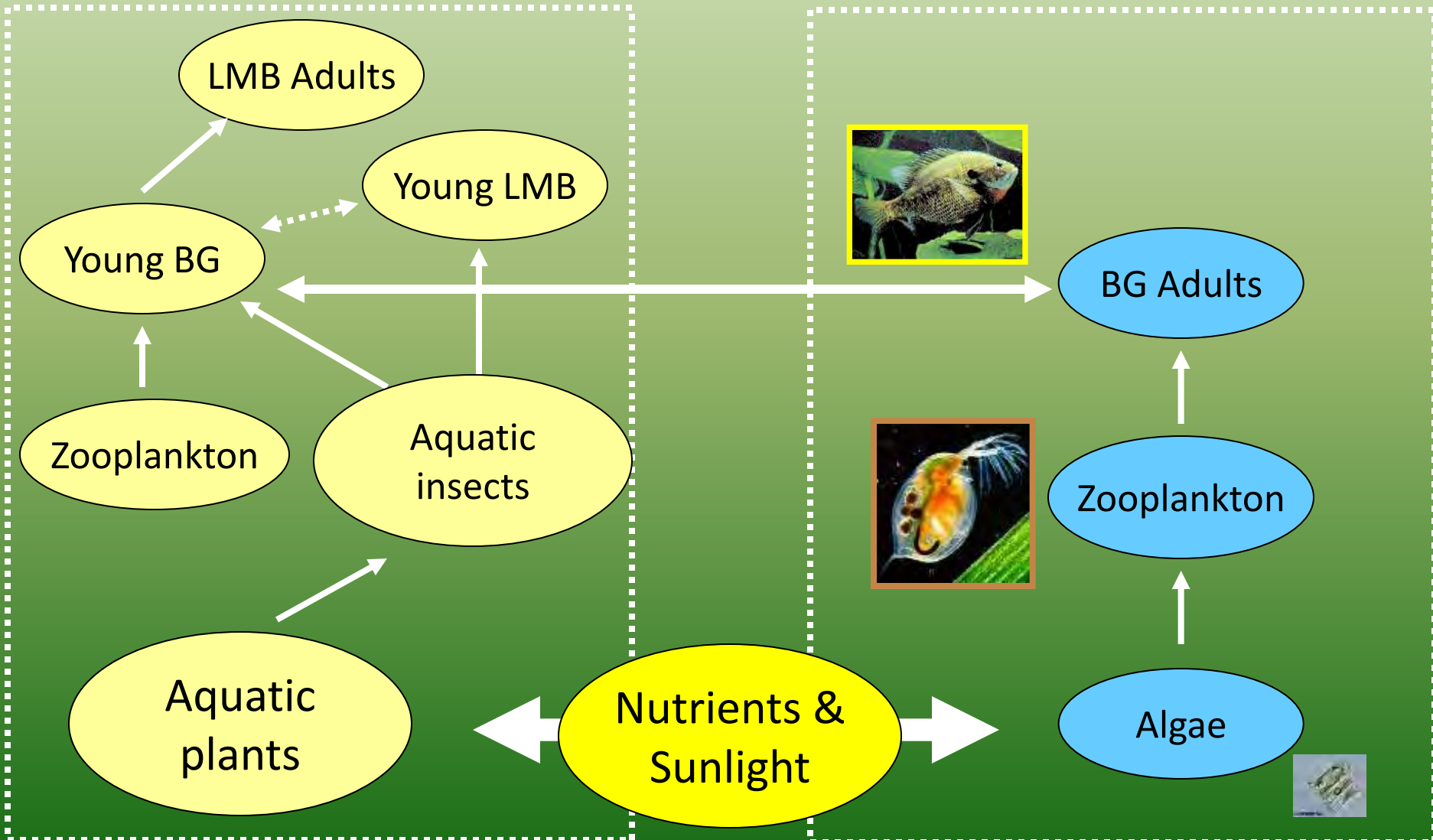
LITTORAL



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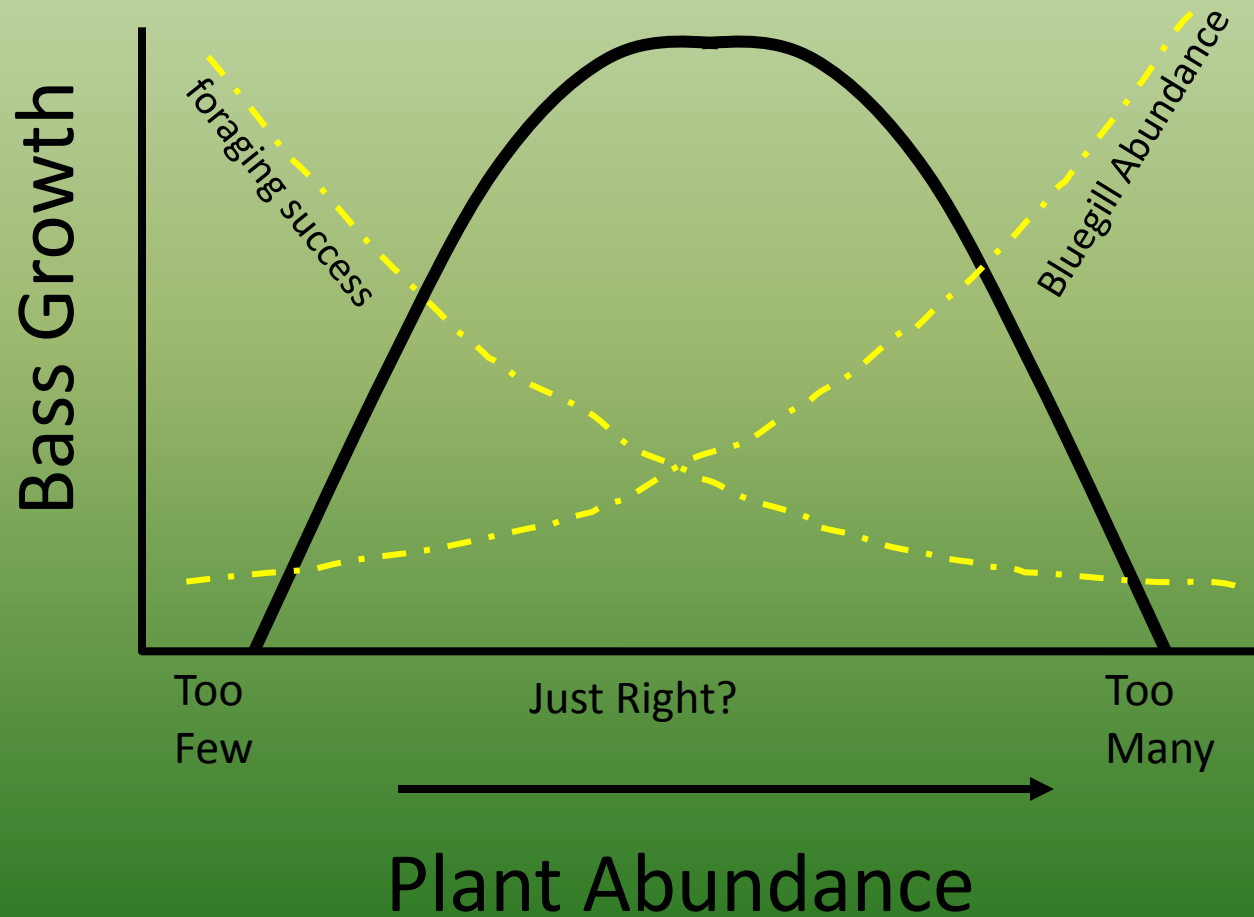
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# AQUATIC PLANT EFFECTS ON BASS GROWTH?



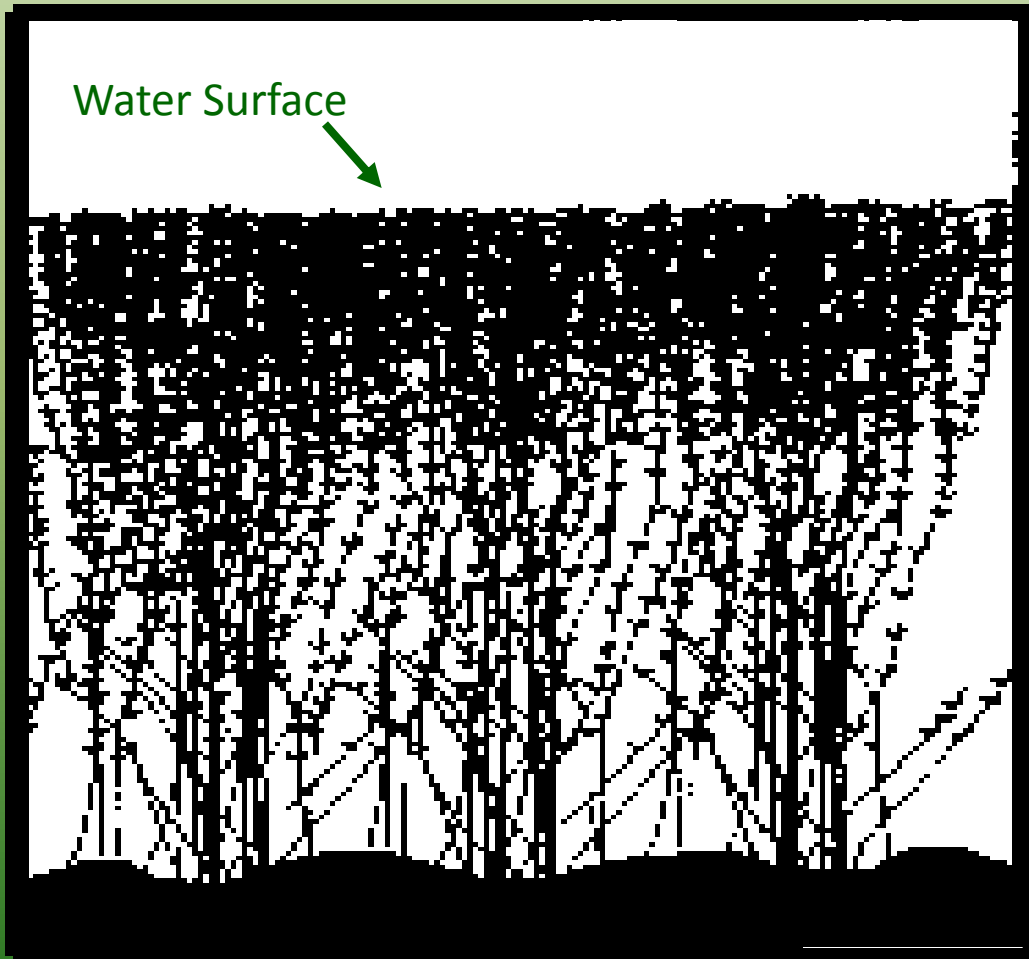
(Modified from Crowder and Cooper 1979)

# DIVERSE, NATIVE PLANT COMMUNITY



# EXOTIC PLANTS: *EURASIAN WATERMILFOIL, (EWM)*

Monospecific bed



Canopy



# STARRY STONEWORT

- Macro Algae
- Forms thick bottom cover
- Crowds out native plants
- Covers fish spawning areas

Starry Stonewort



Chara



Photo from GVSU

# MANAGEMENT ACTIVITIES

- Primarily focused on aquatic plant management
  - 90% exotic plant control
  - Driven by recreational uses
  - In reality we are managing lake food webs promoting a diverse native plant community
- Nutrient abatement, i.e. sewers
- Perceived “bigger” problem when exotic plants invade



# CONCLUSIONS

- When managing one component of a lake we are affecting many others
- Managers should take in to account the intended and non-intended results of their actions
- Management goals should be to maintain a healthy and diverse native plant community as aquatic plants play a pivotal role in aquatic ecosystems

# QUESTIONS?

