

# Travel Log of Ecology in Puget Sound



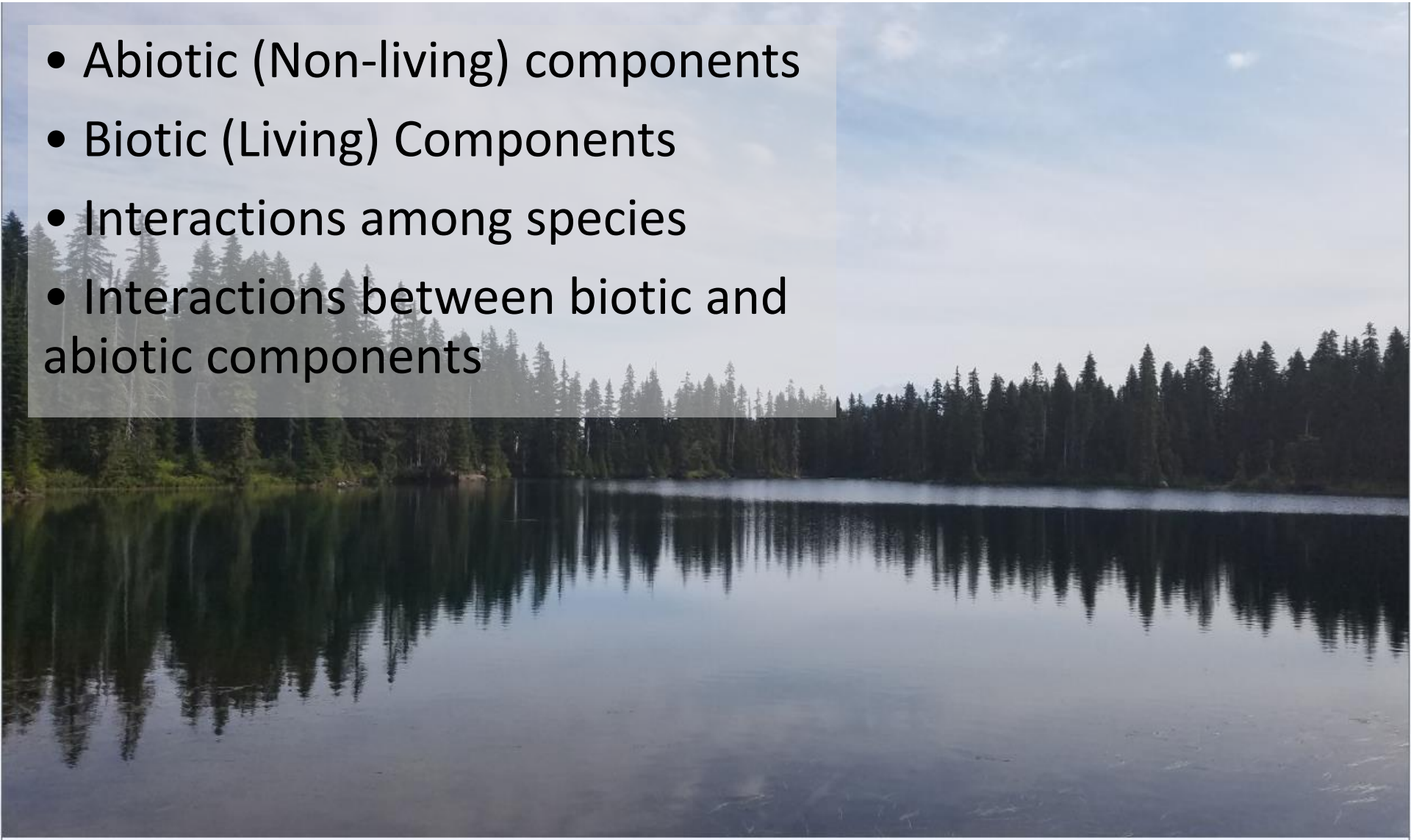
Patricia Townsend, Ph. D.

Associate Professor

Natural Resources Extension Specialist

# What is an Ecosystem?

- Abiotic (Non-living) components
- Biotic (Living) Components
- Interactions among species
- Interactions between biotic and abiotic components



# Puget Sound Ecosystems



Goat Rocks Wilderness





Cape Flattery

# Marine



Tatoosh Island



# Keystone Species







# Marine



Orcas Island Beach



# Marine



Vashon Island Beach

# Freshwater





# Forests

- World's largest spruce tree
- About 1000 years old
- 191 feet tall
- 58 feet and 11 inches circumference
- Quinault rainforest
- 12 feet of rain a year





# Forests





# Alpine

A woman with long brown hair, wearing a green long-sleeved shirt, a black vest, tan pants, and a leopard-print hat, is holding a young child with blonde hair. The child is wearing a blue jacket. They are standing on a grassy mountain slope with small white flowers. In the background, there is a large glacier flowing through a mountain valley, surrounded by evergreen trees and rocky terrain. The sky is overcast with some clouds.

Nisqually Glacier



# Human Modified





# Human modified



# Abiotic Resources

- Light
- Substrate
- Freshwater
- Saltwater
- Oxygen
- Air



Elwha nearshore 15 October 2015. Photo by Tom Roorda and CWI  
All rights reserved



# Biotic components

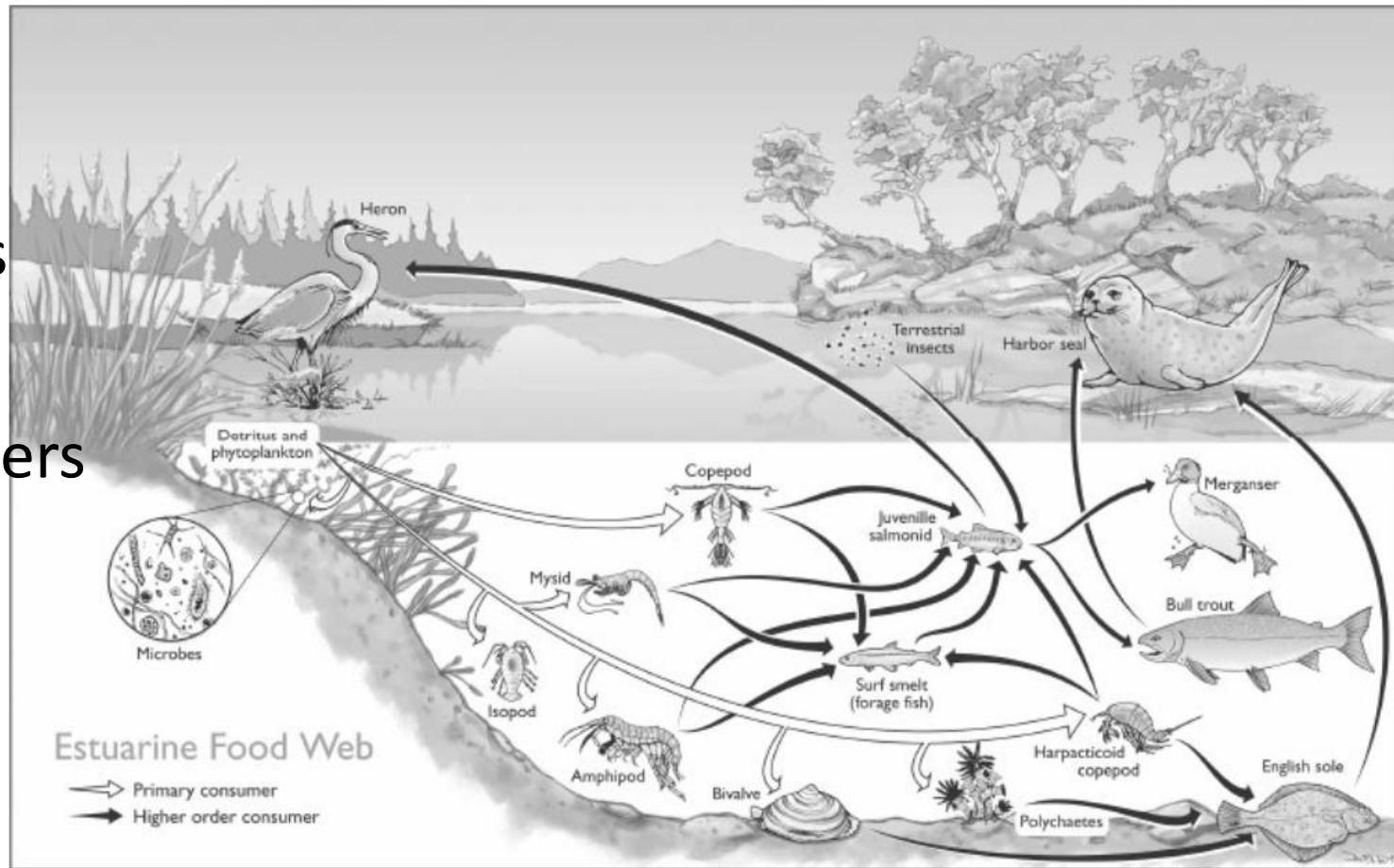
- Primary Producers
- Consumers
- Decomposers

What is your favorite organism?



# Puget Sound Food Web

- Primary producers
- Herbivores
- Carnivores
- Decomposers





# Competition

- Food
- Substrate
- Shelter
- Water
- Oxygen





# Symbiosis

- Commensalism
- Parasitism
- Mutualism





# Ecosystem Services

- Oxygen
- Food
- Erosion control
- Building materials
- Water
- Temperature





# Ecosystem Engineers





# Humans as Ecosystem Engineers





# Humans as Ecosystem Engineers





# Humans as Ecosystem Engineers



Photo by Larry Ward, Lower Elwha Fisheries Office (2005)



# Humans and the Environment





# Elwa River Restoration project

- After Largest Dam Removal in U. S. History
  - <https://video.nationalgeographic.com/video/news/00000155-0cbb-d75d-ab75-6cfbc86e0000>
- How the Elwa River was Saved
  - <http://tlas.nautil.us/video/291/how-the-elwha-river-was-saved>