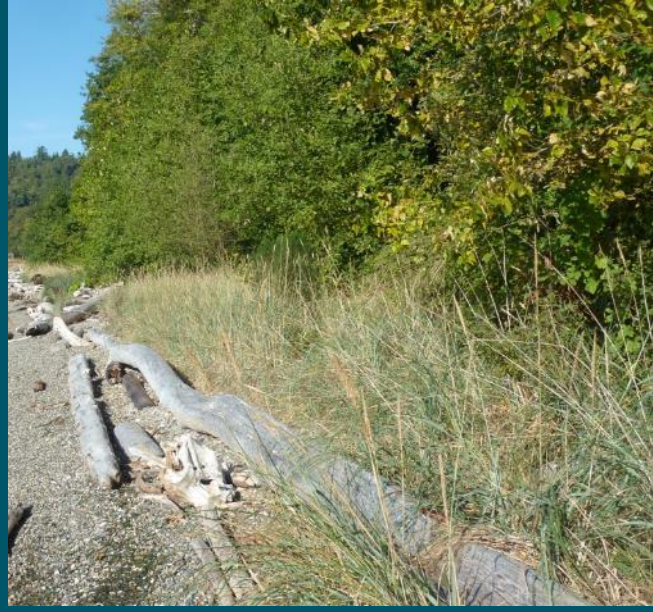




Seahurst Park – Wetland and Riparian Restoration:
Ecosystem Restoration

Presented by John Small, PLA, ASLA

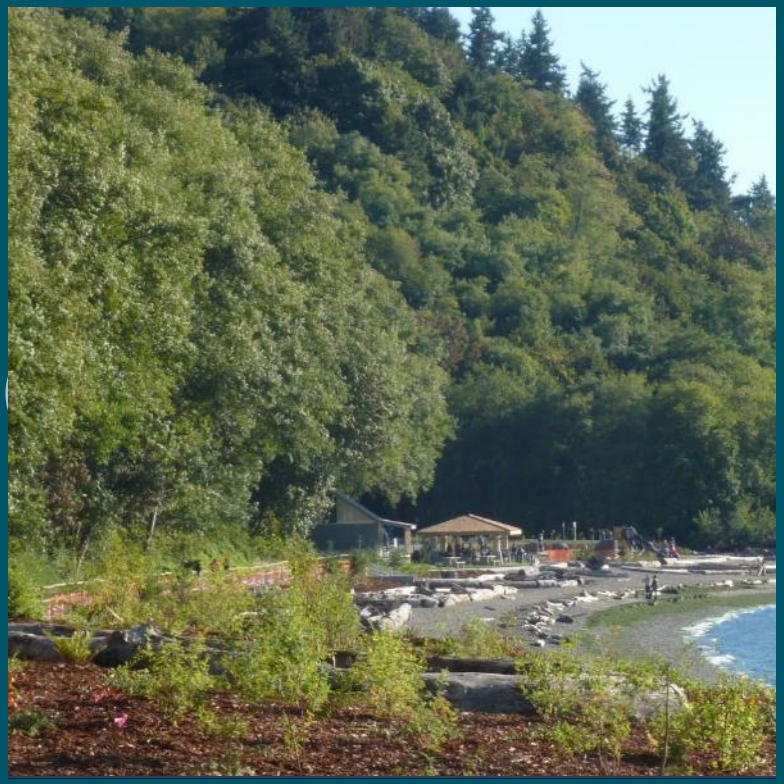
September 30, 2014
Environmental Science Center Public Education Series

Presentation Overview

1. Introduction to Landscapes and Ecosystems
2. Plant Communities of Seahurst Park
3. Restoration Design and Construction
4. Maintenance and Sustainability

1. Introduction to Landscapes and Ecosystems

- Landscapes
  - Ecosystems
    - Communities
      - Habitats

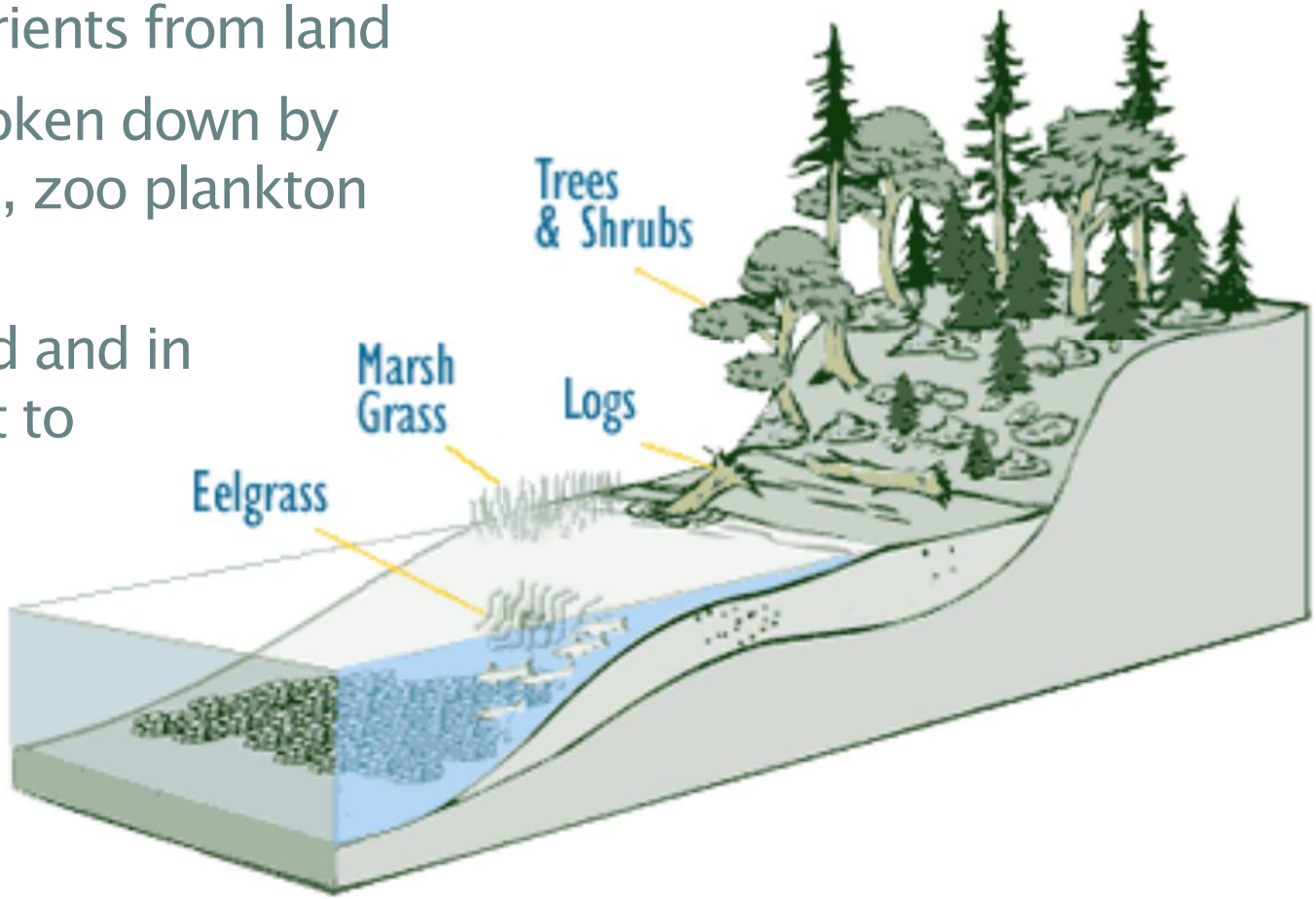


Ecosystem Restoration Goals

- Preserve existing high-functioning nearshore habitats
- Restore and protect the natural bluff-to-beach sediment process
- Restore beach slopes and substrates
- Restore forage-fish spawning, juvenile salmon rearing, and migration intertidal habitats
- Restore upland and shallow intertidal habitat connectivity
- Diversify habitat in the freshwater/saltwater interface

Detritus-based Food Web

- The entire food web is based largely on nutrients from land
- Vegetation broken down by bacteria, fungi, zoo plankton and insects
- Occurs on land and in nearshore, out to the edges of the photic zone



Process-based Restoration Approach

Wave energy
Sediment delivery
Sediment transport

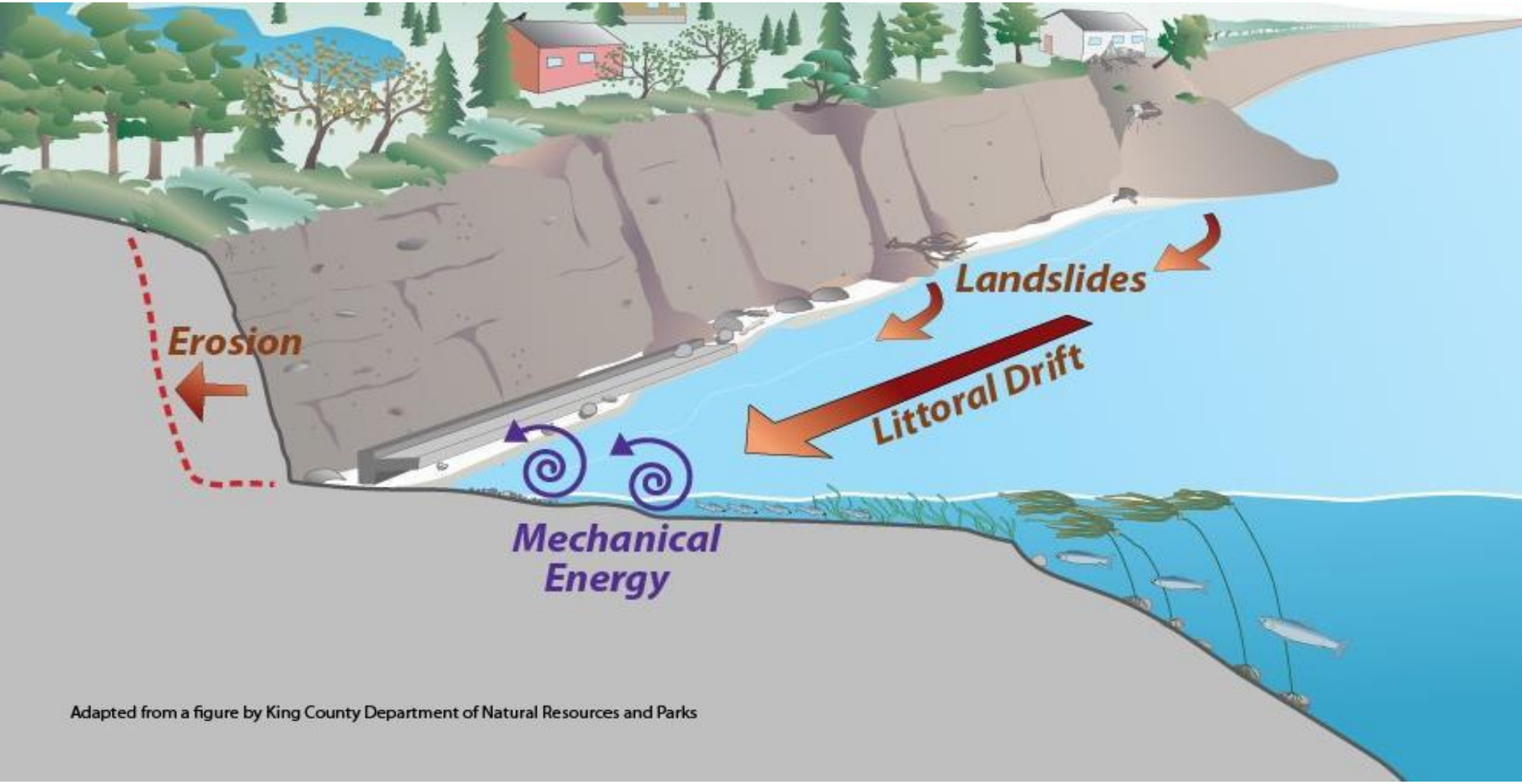
Conceptual Model:
The role of Puget Sound nearshore beaches in sustaining forage fish

Beach profile
Sediment grain size
Beach temperature

Forage fish spawning and production
Food web support

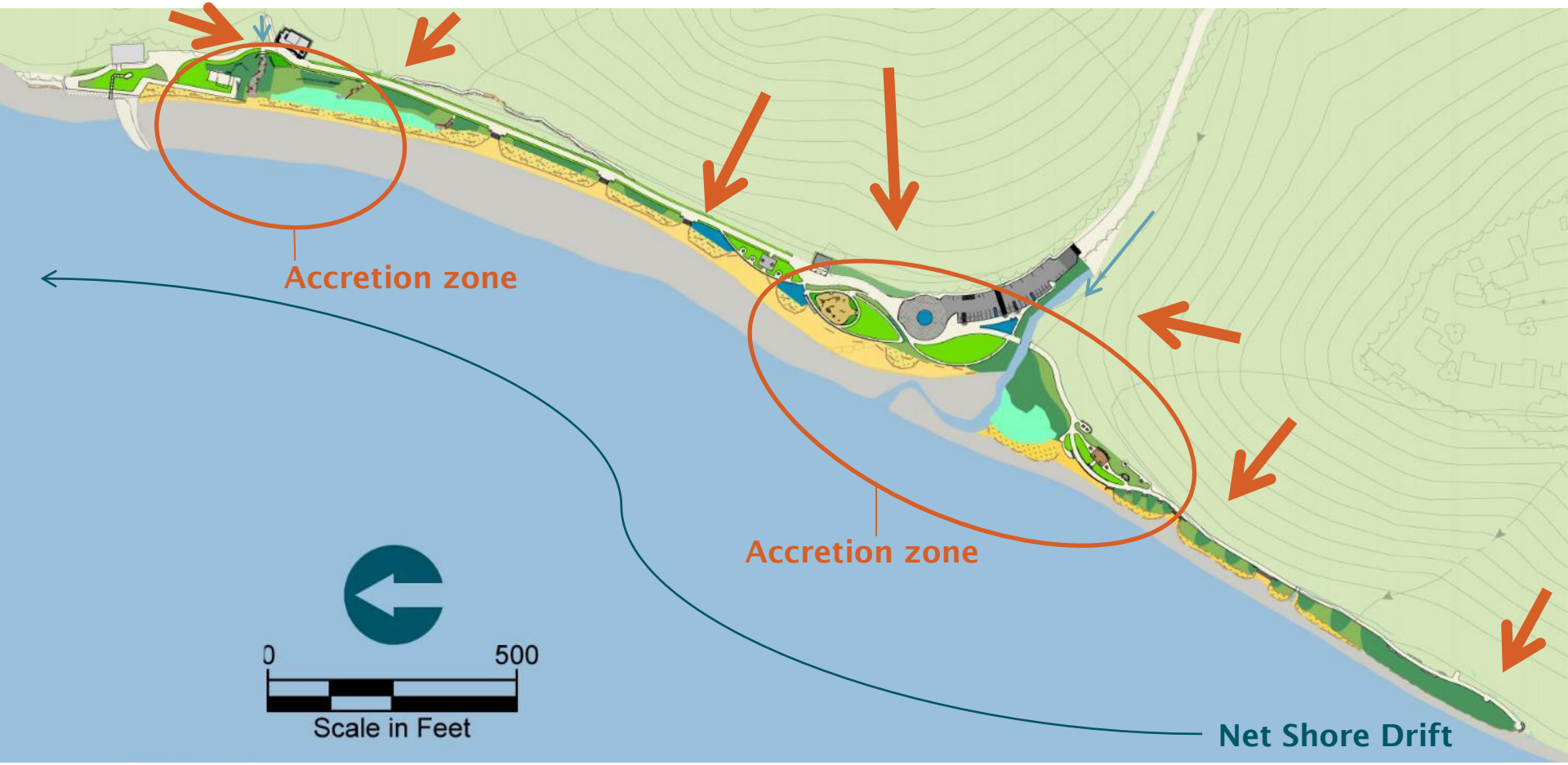
Source, Conceptual Model: PSNERP and Simenstad et al. 2006; Penttila 2007

Supporting Habitat-forming Processes

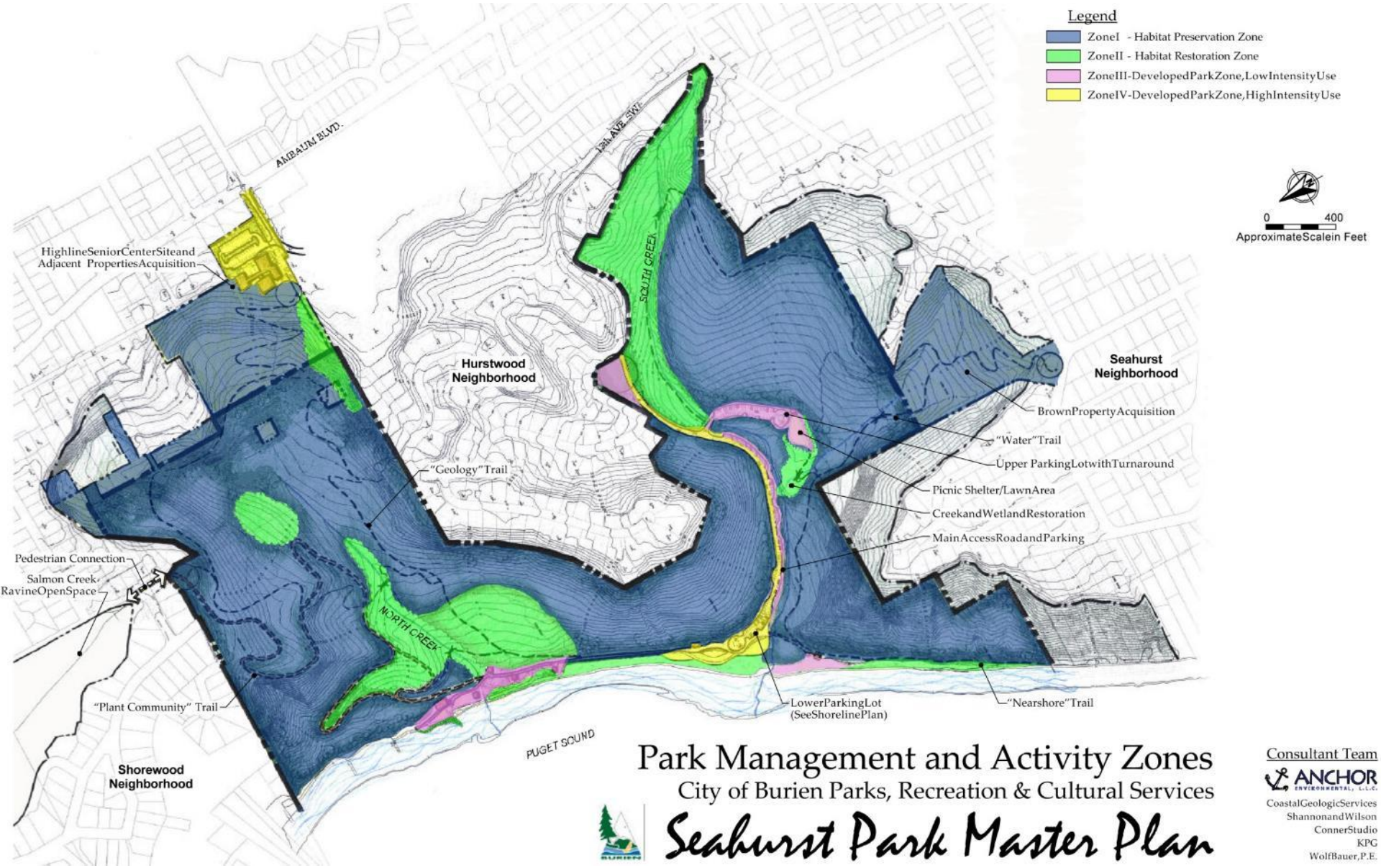


Source: King County WRIA 9

Bluff-to-beach Sediment Supply Processes



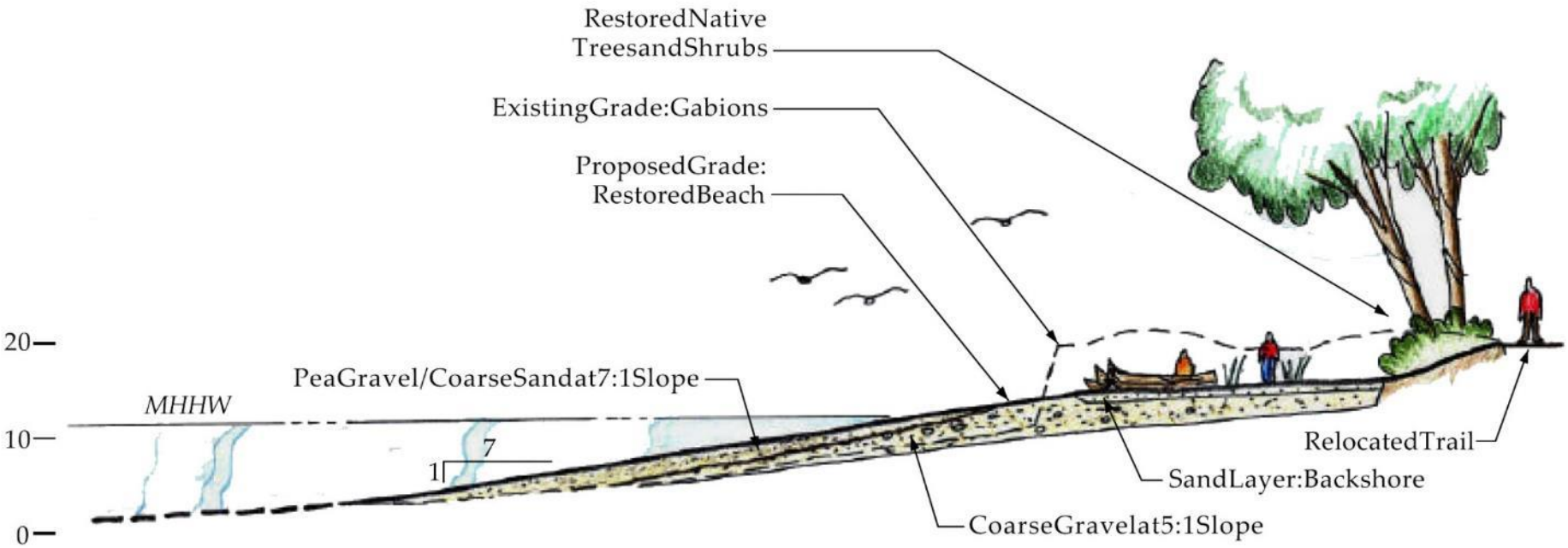
Habitat Preservation and Restoration Zones



Reconnecting Terrestrial/Riparian and Aquatic/Intertidal Habitats

Reconnecting Freshwater Streams and Marine Habitats

Balancing Habitat, Access, and Shoreline Stability



Section A - South Shoreline

Terrestrial Communities

Madrone/Salal

- Madrone
- Salal
- Big Leaf Maple
- Indian Plum
- Sword Fern

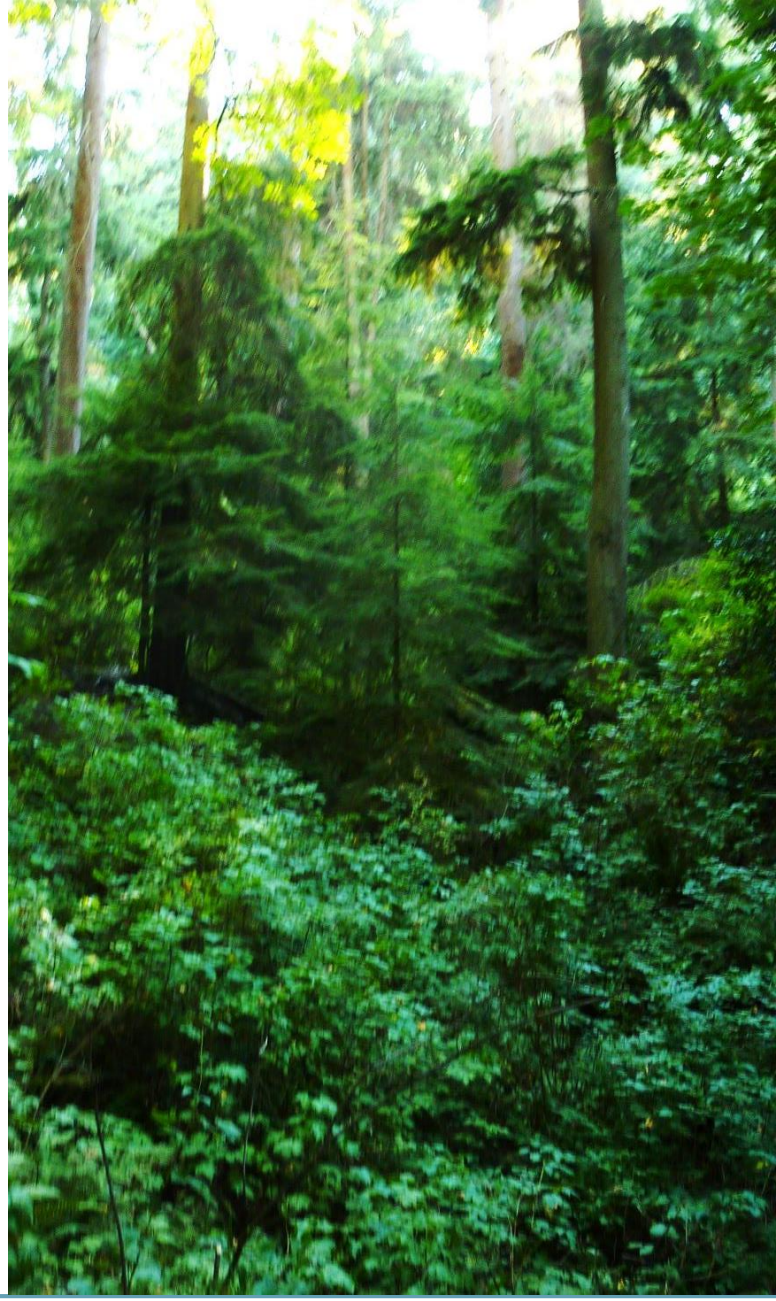
Sandy, Drier Soils

Terrestrial Communities

Hemlock/Douglas fir

- Vine Maple
- Salal
- Salmonberry
- Indian Plum
- Sword Fern

Less Disturbed, Second-growth, Drier Soils

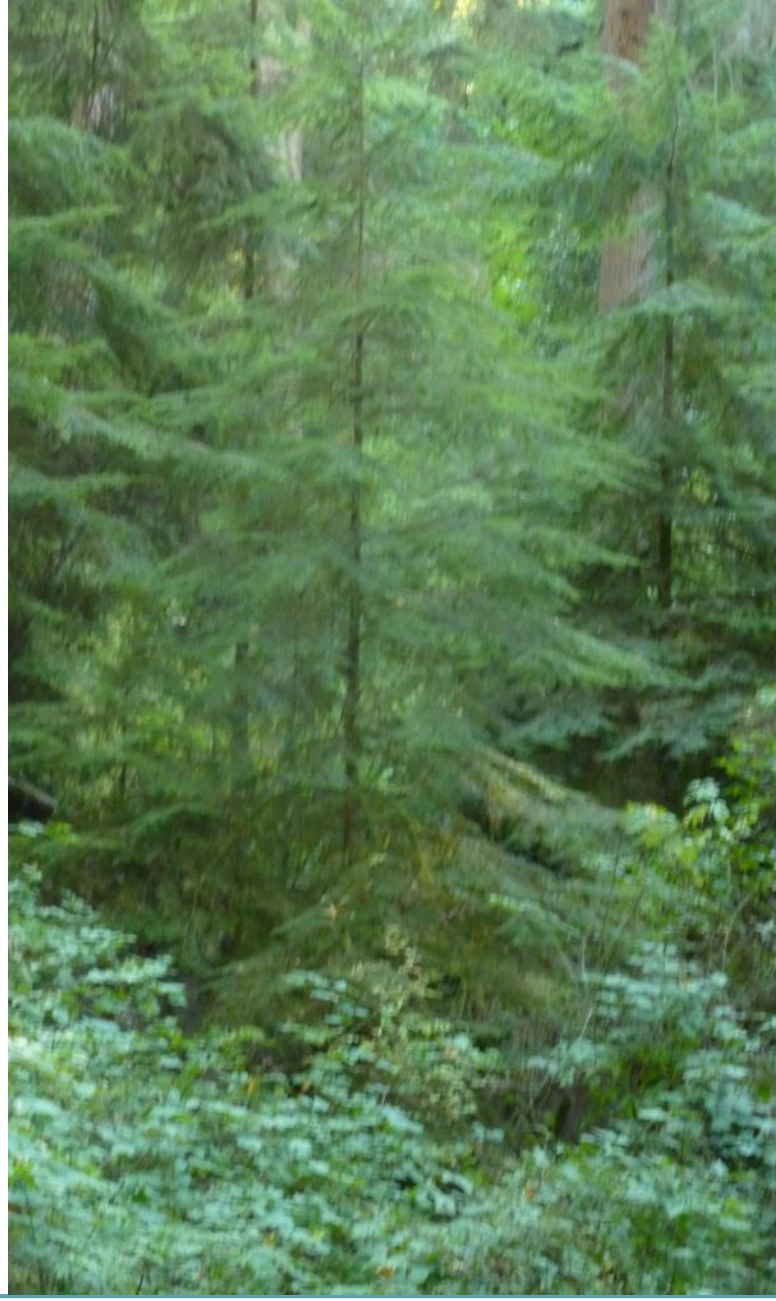


Terrestrial Communities

Western Red Cedar

- Salmonberry
- Lady Fern
- Skunk Cabbage
- Devil's Club

Less Disturbed, Second-growth, Wetter Soils

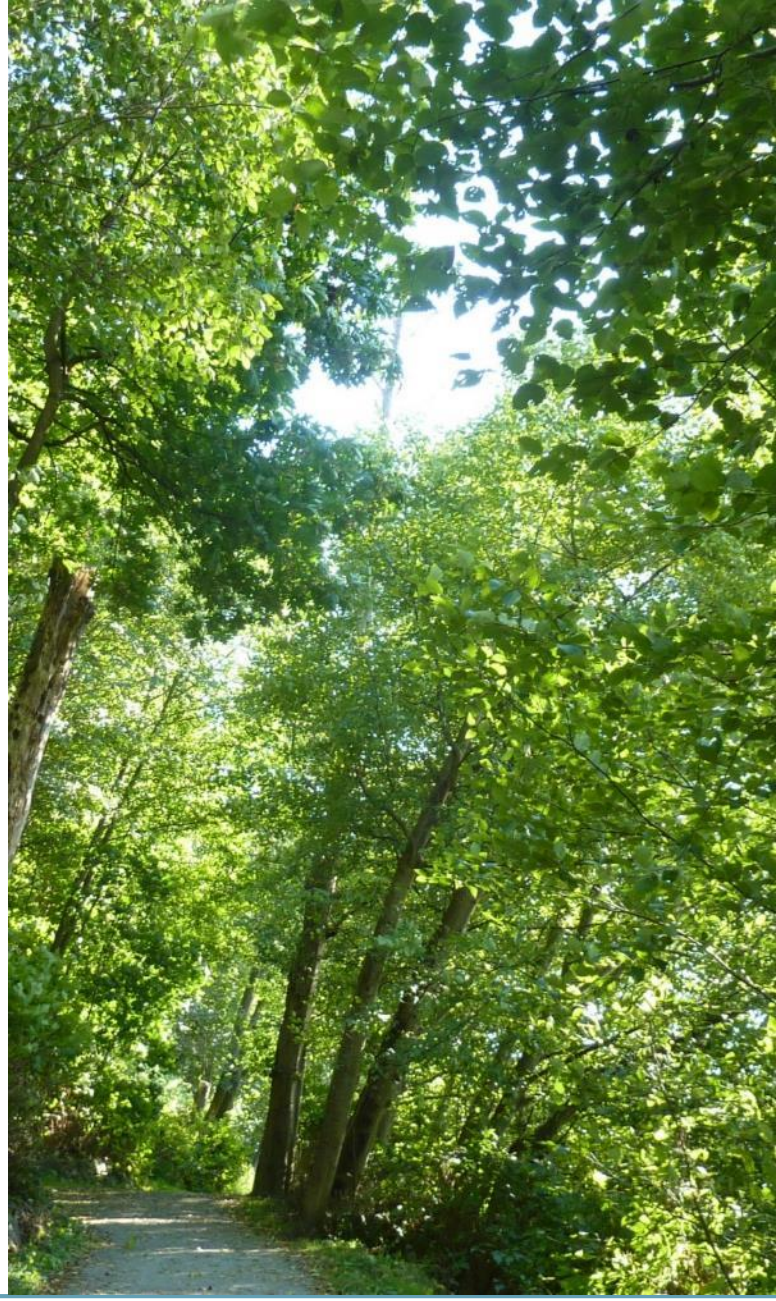


Terrestrial Communities

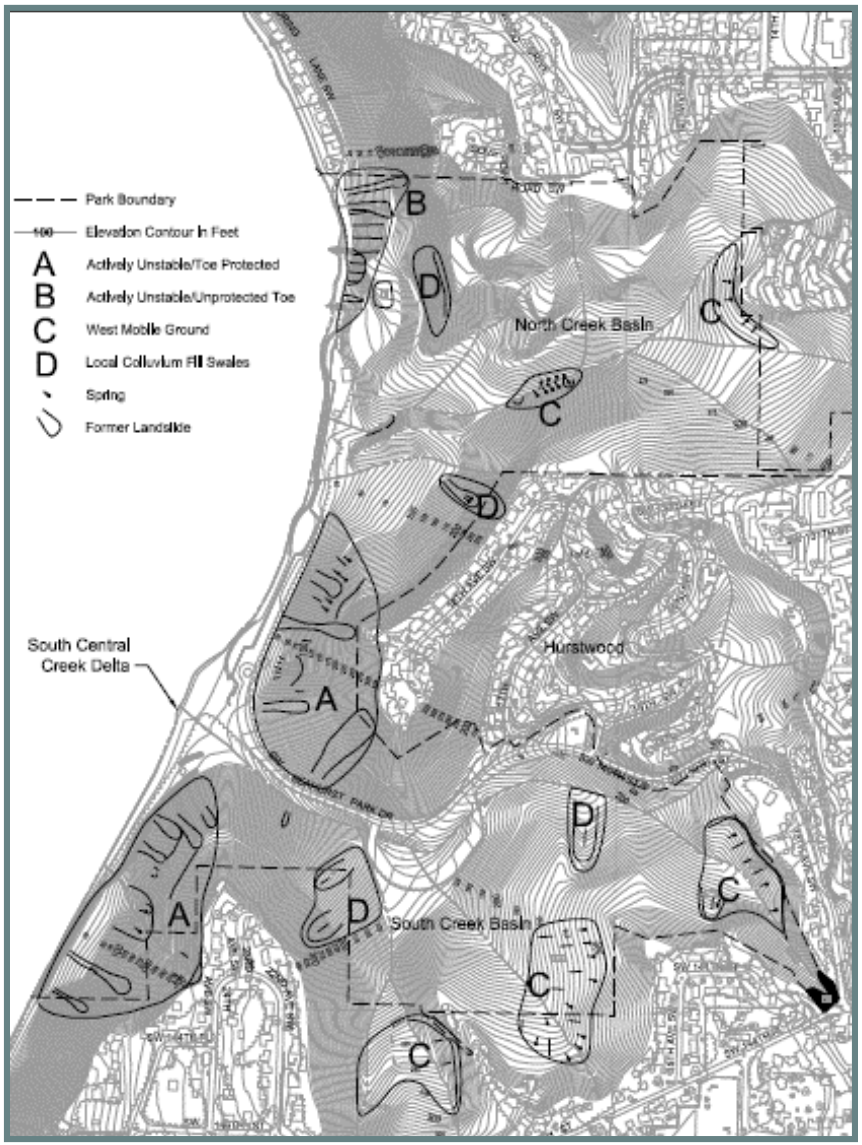
Alder/Salmonberry

- Horsetails
- Salal
- Piggyback Plant
- Lady Fern
- Blackberry

Disturbed Areas, Wetter Soils

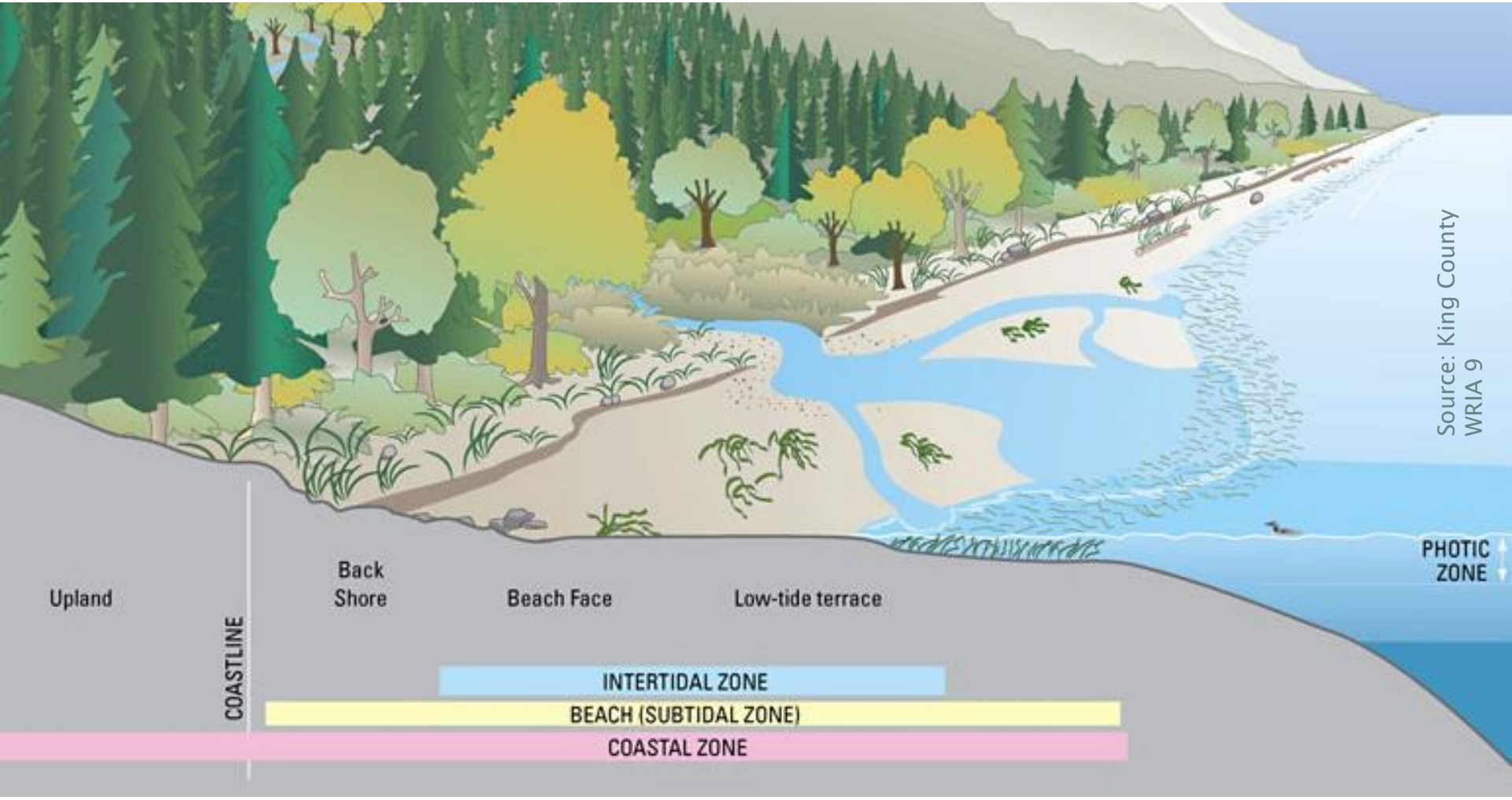


On-site Unstable Hillsides



Map Source: Shannon & Wilson 2002

Aquatic Communities



Source: King County WRIA 9

Accretion Zones are Hot-spots in a Detritus-based Food Web

South Shoreline After Re-vegetation

Beach Communities

Dune Grass (*Elymus mollis*)

- Gumweed
- Vetch
- Coastal Strawberry
- Salt Grass (*Distichilis spicata*)

Pickleweed

- Fat Hen
- Jaumea
- Silverweed (*Potentilla Pac.*)

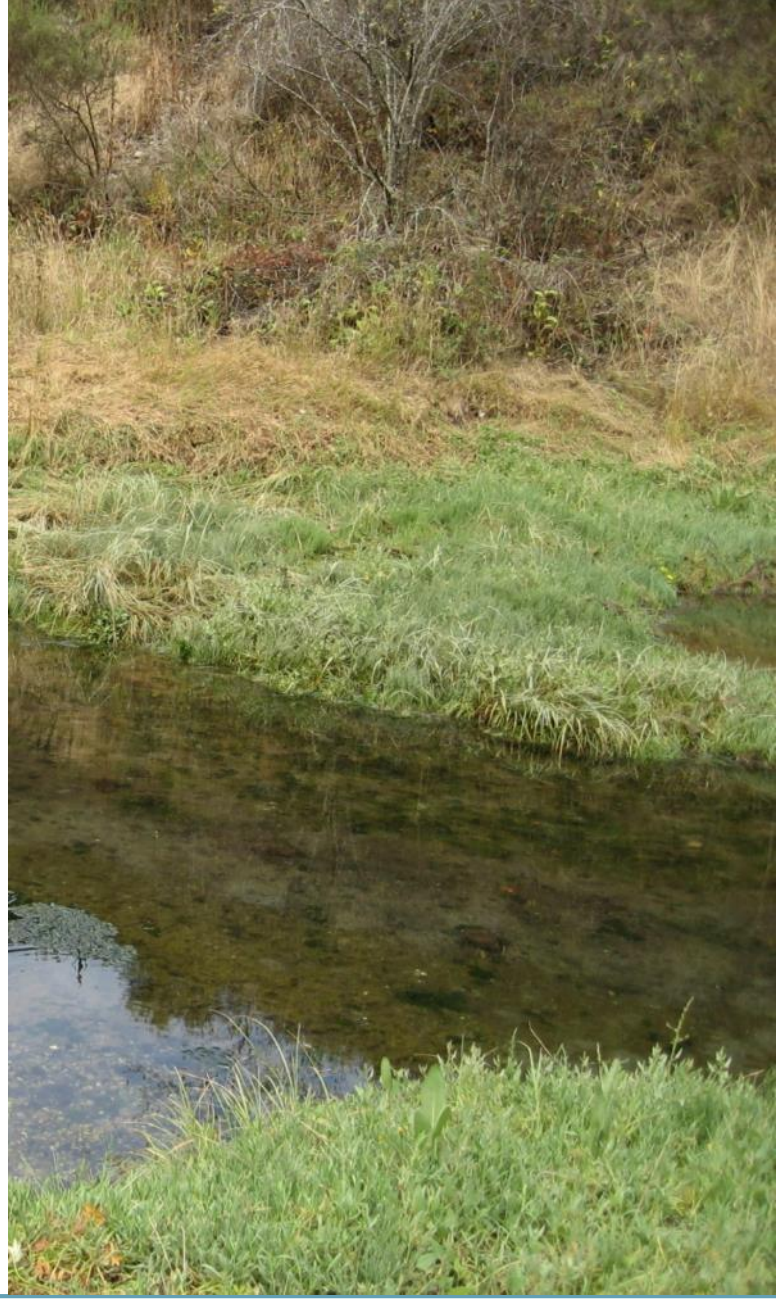
Marsh Communities

Dune Grass (*Elymus mollis*)

- Gumweed
- Vetch
- Coastal Strawberry
- Salt Grass (*Distichilis spicata*)

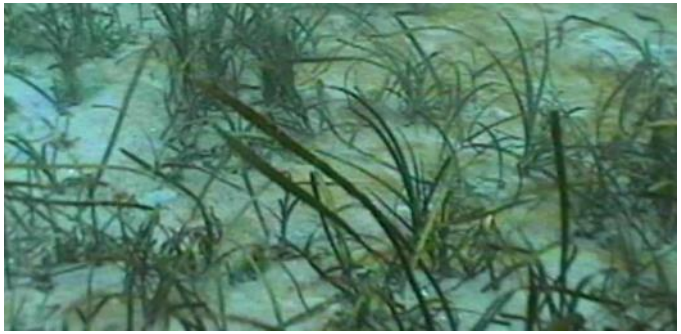
Pickleweed

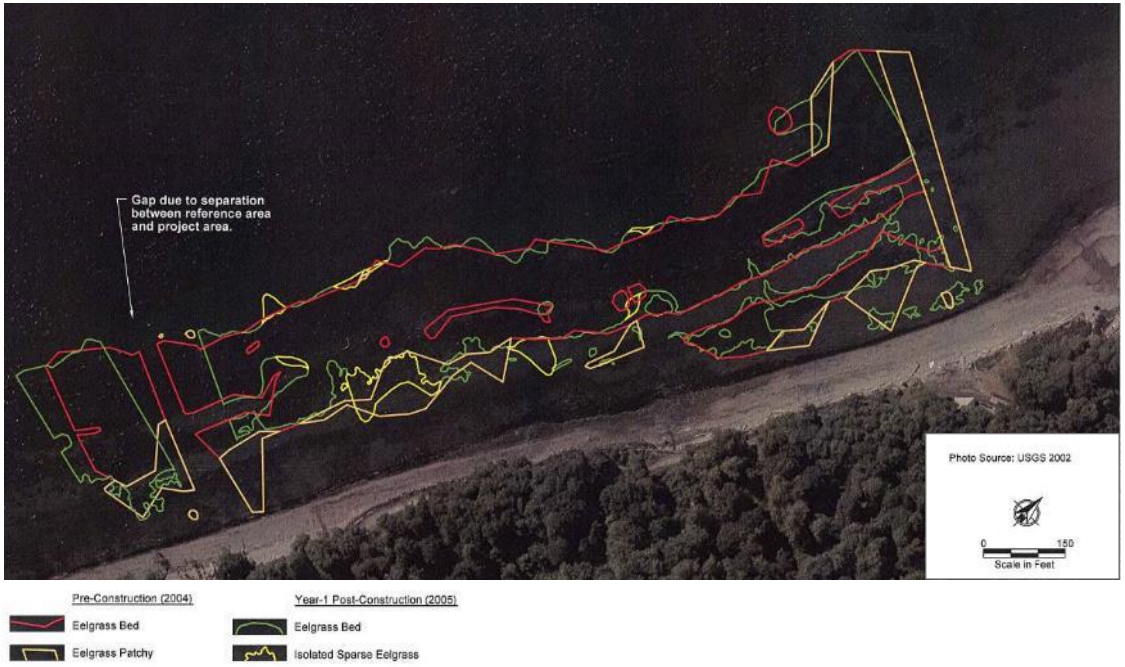
- Fat Hen
- Jaumea
- Silverweed (*Potentilla Pac.*)
- *Carex*



Submerged Aquatic Vegetation

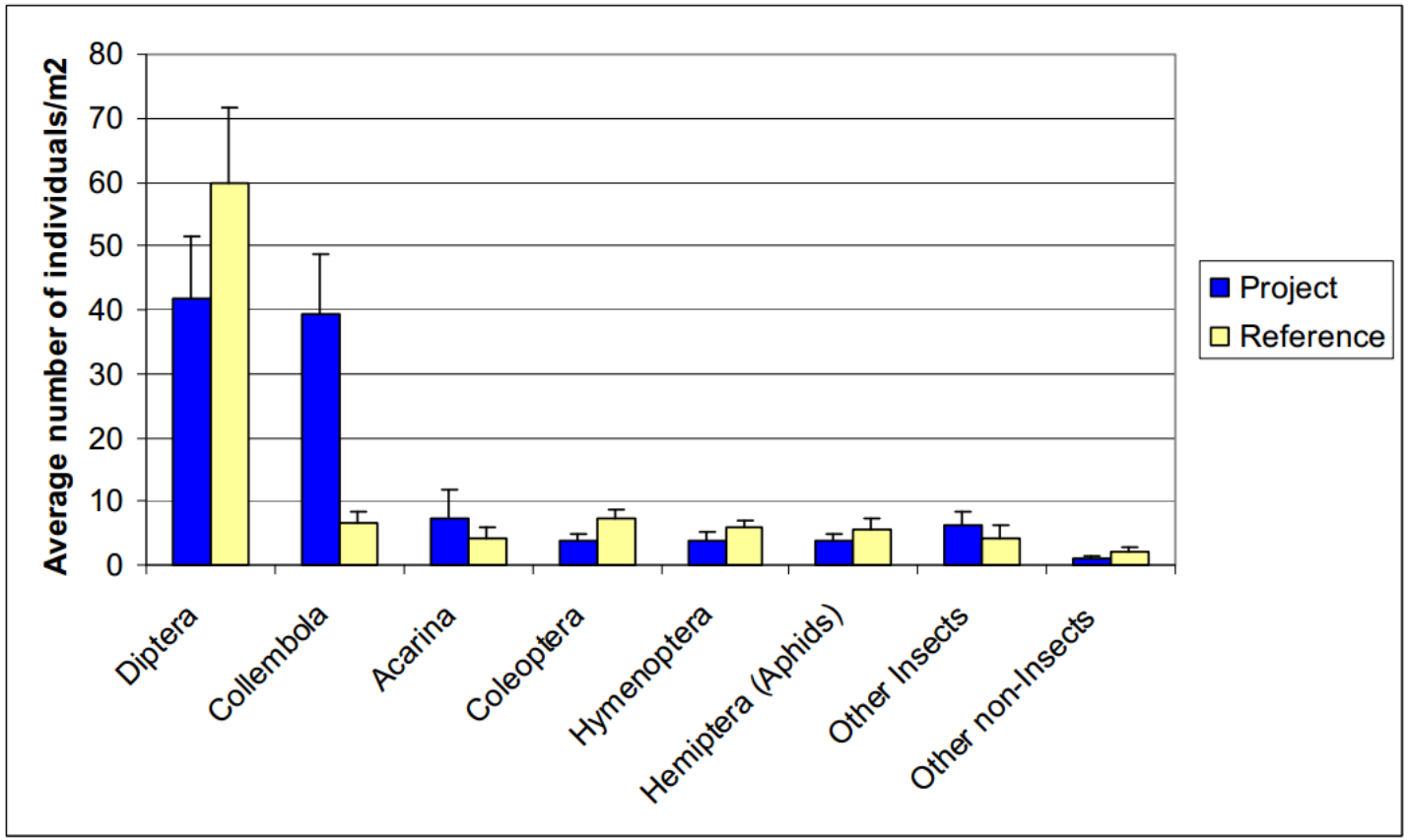
- Eelgrass
- Kelp
- Algae





North Shoreline – Completed Beach

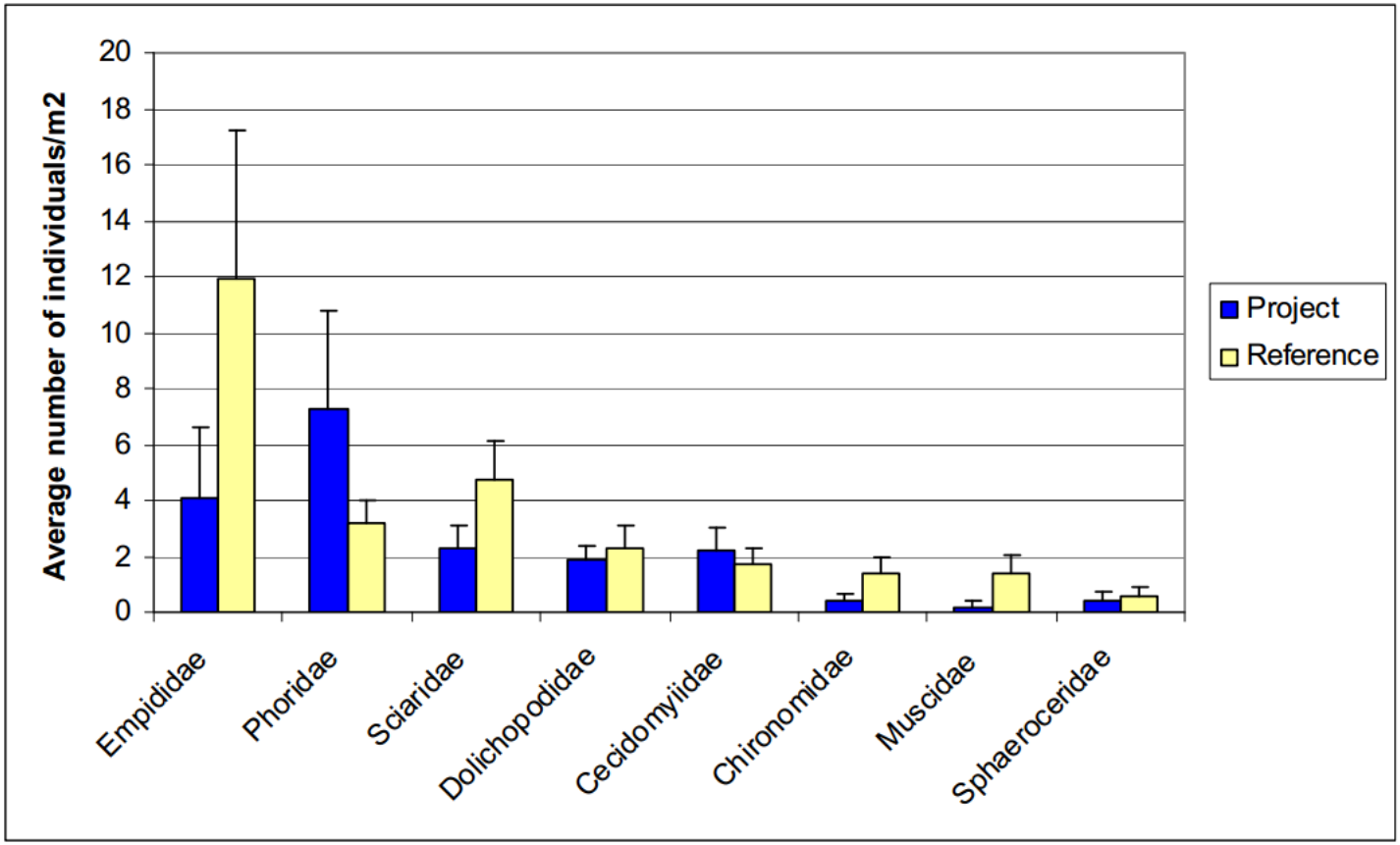
Is It Working?



Source: Armbrust, Toft, and Cordell 2009

Figure 8. Average density of arthropods (except talitrids) in Seahurst Park fallout traps combined for June and July.

Is It Working?

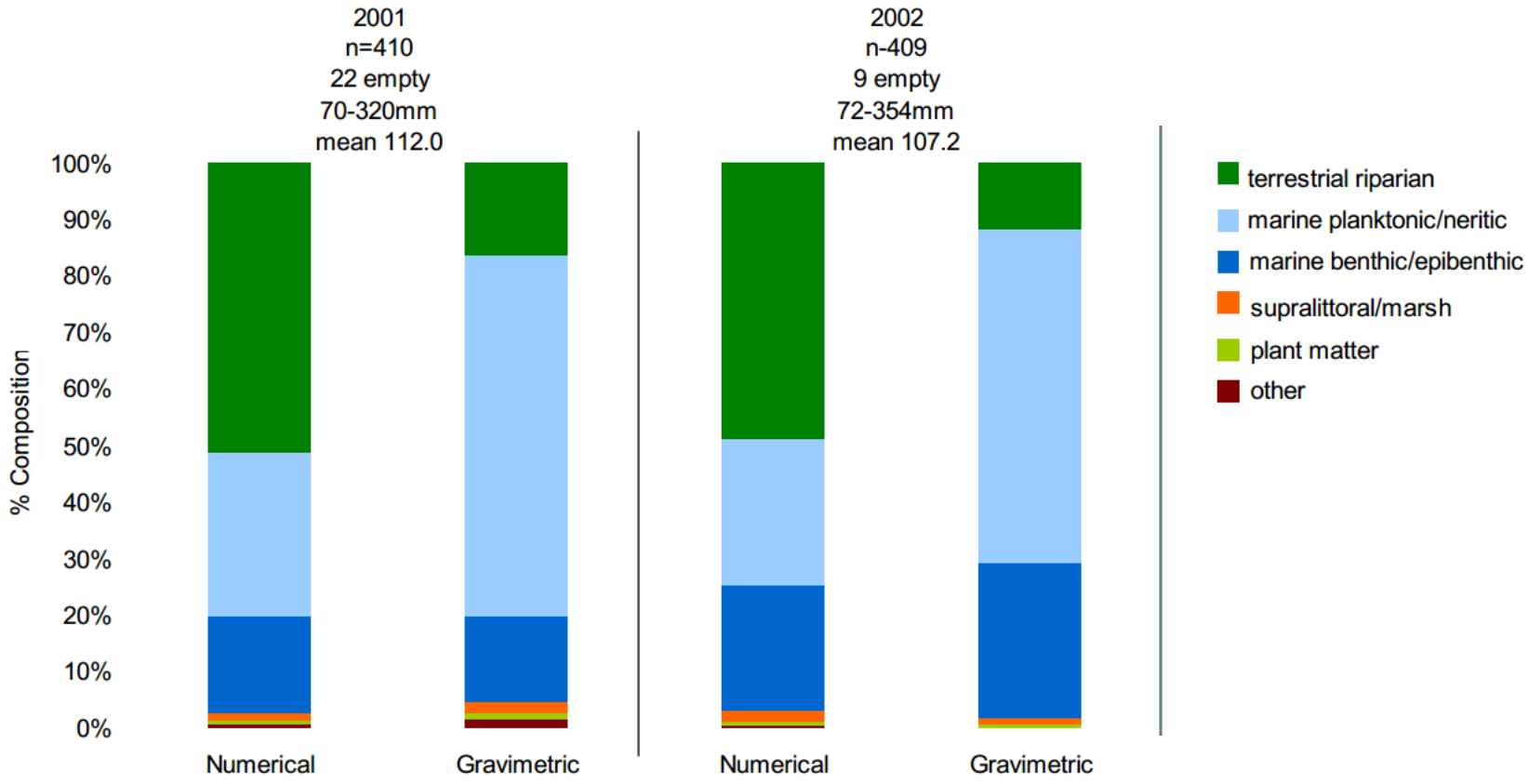


Source: Armbrust, Toft, and Cordell 2009

Figure 9. Average density of Diptera in Seahurst Park fallout traps combined for June and July.

Is It Working?

What juvenile chinook eat at Seahurst Park:



Source: Brennan, Higgins, Cordell, and Stamatiou 2004

Summary

1. Introduction to Landscapes and Ecosystems
2. Plant Communities of Seahurst Park
3. Restoration Design and Construction
4. Maintenance and Sustainability

North Shoreline – Completed Beach

North Shoreline – Pre-project

North Shoreline – Path and Beach Construction