

- 1) (3 pts.) Name three ways that the Duwamish River estuary was physically altered in the last 1000 years, and describe three different ways (preferably one matching each of the alterations) in which these changes affected the stage of the salmon life cycle that inhabits the estuary.

a)

b)

c)

- 2) (4 pts.) Name four categories of primary producers in nearshore estuarine waters, and describe at least two distinguishing characteristics of each.

a)

b)

c)

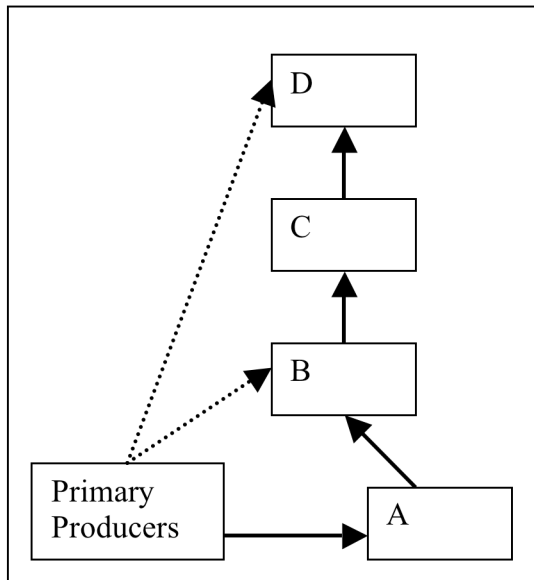
d)

- 3) (1 pt.) Describe two ways that estuarine macroalgae and eelgrass enhance habitat besides providing food supply.

a)

b)

- 4) (2 pts.) Match the type of biota or material in the list below to the labeled boxes in the diagram below to identify the components of the nearshore estuarine food chain. The arrows indicate consumption (for example, B consuming A) or transformation.



Juvenile & Forage fish

Detritus

Adult Fish, Birds & Mammals

Benthic Invertebrates

a)

b)

c)

d)

- 5)
- 6) (1.5 pts.) Name two examples of animals from each of the four categories listed above.

a) Juvenile & Forage fish:

b) Adult Fish, Birds & Mammals:

c) Benthic Invertebrates:

- 7) (2 pts.) Estuaries have unique physical, chemical, and biological properties.

a) Name and describe the physical process that occurs at the precise boundary where fresh water meets salt water.

b) Describe two ways that this boundary benefits the biological system.

8) (3 pts.) Identify two different strategies for cleaning up contaminated sediments in an estuary, and describe one advantage and one disadvantage of each method.

a)

b)

9) (1.5 pts.) Describe three major pathways by which contaminants reached the Duwamish River estuary.

a)

b)

c)

10) (2 pts.) In the forum, we focus on the management of the Duwamish estuary.

a) Describe in detail two similarities between Washington's Shoreline Management Act and the Growth Management Act.

b) Give two detailed examples of why the Duwamish estuary is listed under as a Superfund site.