

Discussion 1: “How Bears Feed Salmon to the Forest” by Robert Semeniuk (Natural History, April 2003, 112:22-27).

Pre-discussion report. Due promptly at the beginning of class on Tuesday, January 13.

1) Write thoughtful responses to *two* of the following questions. Responses should put ideas in your own words and should draw support both from the article and from your own knowledge and ideas.

a) Why are bears choosy about the size of salmon they catch? Why are some bears choosy about the parts of each salmon that they eat versus discard? The article tells us that bears need fat and that salmon eggs provide more fat than salmon sperm. If this is the case, why do bears more commonly catch male salmon than female salmon? What factors other than the nutritional value of their prey may affect bears’ feeding patterns?

b) Adult salmon usually reproduce only once during their life and then die in the stream where they reproduced. According to the article, “nearly half of the nutrients consumed by juvenile salmon comes from their dead parents.” Explain how this would work. What type of methods might the researchers have used to come to this conclusion? Imagine that your sister-in-law is a graduate student in fisheries management. She suggests that, because salmon can only reproduce once, harvesting salmon *after* they reproduce will not affect the numbers of salmon in the future. Based on the information in the article, do you agree with her idea? Why or why not?

c) Why did the ecologists focus on different nitrogen isotopes in their studies? What information does each isotope represent? What have they learned about the ecosystem by studying the amounts of different nitrogen isotopes in the trees? Diagram the pathway that nitrogen-15 follows through this ecosystem. Are there places where you can’t figure out where the nitrogen comes from or where it goes? Compare the isotope “signatures” that you would expect to find in a forest with healthy salmon and bear populations compared with a forest with salmon but without bears? Explain your prediction.

d) Often when streams are dammed, salmon cannot migrate from the ocean into their home streams for reproduction. How would damming the streams in a forest affect the ecosystem? Be sure to describe the impacts on several different species, and to explain your reasoning. Imagine that you are in charge of managing a forest in the Pacific Northwest. A hydroelectric company has offered to pay \$10 million for the right to dam the stream running through your forest. Would you accept their offer? Why or why not? How could you convince local taxpayers to reject this offer? Are there possible economic benefits of not damming the stream?

3) Write one thoughtful question that you have about the article. Begin with a sentence or two that describes the context for the question (e.g., what the writer said, what you know about biology). Then ask a question that relates to the content of the article. Good questions will try to deepen your understanding of concepts, or will try to relate the content of the article to other ideas. The most interesting questions will be used to fuel our in-class discussion!