

Part A:

Fill in the blanks from a word in the box. Each word can only be used once. Some words won't be used. (Worth 1 point each = 9)

Cetacean	Bioaccumulation	Of special concern	Nutrients
Omnivore	Zooplankton	Predator	Energy
Toxins	Extirpated	Photosynthesis	Prey
Phytoplankton	Extinct	Scavengers	Echolocation
Energy	Threatened	Decomposers	Herbivore

1. The arrows in a food chain show the flow of _____
2. Planktonic plants are called _____
3. An animal that feeds on other animals is called a _____
4. This is the word for when toxins get more and more concentrated as you go up the food chain

5. An animal that only eats producers is known as a _____
6. This means that a species no longer exists in the wild in Canada, but does exist elsewhere in the wild.

7. This is the term for when it is recognized that an organism no longer exists _____
8. PCBS, dioxins, furans and DDT are examples of persistent _____
9. These are organisms that feed on dead organisms or waste. They grow in them and recycle the nutrients.

Part B:

There are three different kinds (ecotypes) of killer whale in British Columbia that make up four populations. These populations are:

northern residents; southern residents; transients; offshores

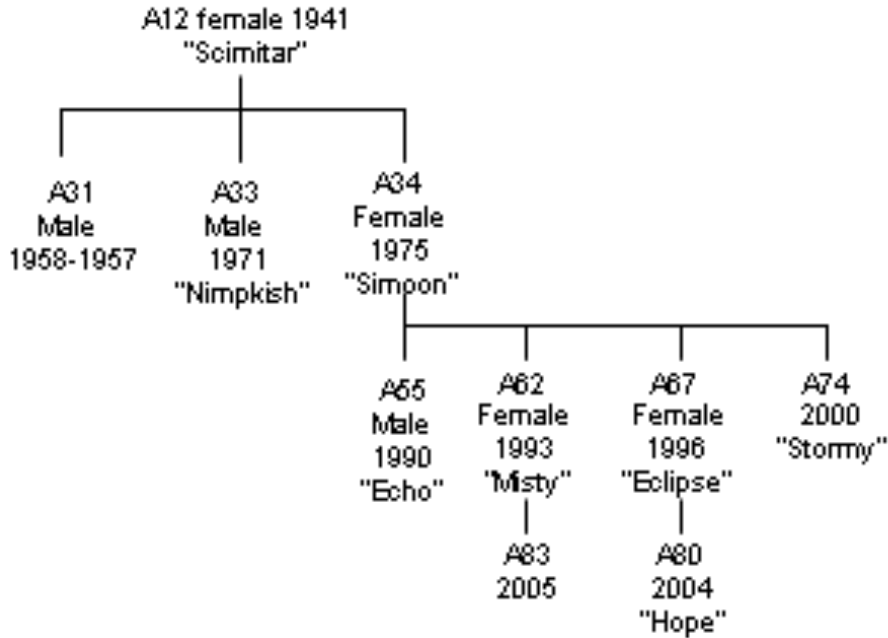
Answer the following questions (16).
Realize that there can be more than one answer for each question.

Which of these populations:

10. Are listed as threatened? _____
11. Are listed as endangered? _____
12. Are listed as of "special concern"? _____
13. Eat marine mammals? _____
14. Have a diet that is about 98% salmon? _____
15. Had only about 86 members in their population in 2006? _____
16. Are very quiet, stealthy hunters? _____

17. Have three different acoustic clans or dialects? _____
18. Are most often found far off the British Columbia shoreline? _____
19. Are often found around the city of Victoria? _____
20. Are known to travel in matriline, with males never leaving the family group? _____
21. Rub themselves on black smooth rocks as a cultural behaviour? (Hint: They do this in areas like the Robson Bight, Michael Bigg Ecological Reserve near Telegraph Cove) _____
22. Rarely use echolocation? _____

Part B: Questions 23 to 28 are about the following matriline.

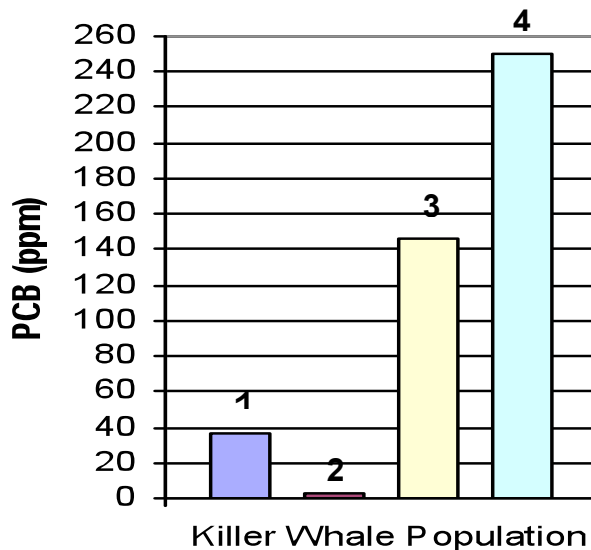


23. Even though A31's body was never found, how is it known that he is dead? (1)
24. What is the relationship between A34 and A74? (1)
25. How many grand-calves does A12 have? (1)
26. How old is A12? (1)
27. Is A33 likely to become as old as A12? Why? (1)
28. Why isn't it known if A80 is male or female? There are 3 possible reasons and you should give 2 (2)

Part C: Short Answers. You **do not** need to answer in sentences.

29. Persistent toxins can cause death and birth defects. Name one other problem they can cause. (1)
30. Name two examples of decomposers (2)
31. What two parts of a killer whale are used to identify it as an individual; to tell it apart from other killer whales? Dr. Michael Bigg proved that you could use this method. (2)
32. Name an example of a cetacean (1)
33. What does S.A.R. A. stand for? (1)
34. Name 5 threats to marine mammals that are the result of things we humans do (5)
35. a. Draw the food chain for a transient orca (1)
- b. Draw the food chain for a resident orca (1)
- c. In these two food chains:
- Put a square around the producers (2)
- Put a star above the 4th level consumer(s) (2)
- Put a circle around the prey of the small fish (2)

36.



The amount of PCBs is shown for (not in order):

- Southern resident males
- Transient males
- Northern resident males
- Northern resident females

- a. Which bar (number 1, 2, 3, or 4) likely represents the amount of toxins in northern resident females of reproductive age? (1)
- b. Which bar likely represents the amount of toxins in transients? (1)
- c. How many more toxins are there in 4th bar than in the 1st bar? (1)

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37.

- a. Blue whales are the largest creatures that ever lived. They can be 30 metres long. They feed on huge amounts of all kinds of plankton. Make a food web for the following organisms: phytoplankton, zooplankton, blue whale, herring, salmon, humans. Let's assume that humans do not eat blue whales! Make sure you do not cross your arrows. (4)

- b. How many food chains in this food web? (1)
c. Name all the 2nd order consumers in this food web (1)

38. Name 4 things that we can do in our everyday lives that would lessen the amount of chemicals in the ocean. (4)

39. The food chain below is for Lake Victoria in Africa

Plankton → Tilapia fish → Lung fish → Crocodiles

- a. What would happen to the number of lung fish if all the crocodiles had been killed by hunters? (1)
b. What would happen to the number of Tilapia fish if all the crocodiles had been killed by hunters? (1)

Part D: Answer in sentences. Look at how much the question is worth to get an idea of how detailed your answer should be.

40. Which has more energy available to it, herbivores or carnivores? Explain! (2)

41. Explain how resident killer whales can recognize who is family and who is not. State why it is so important that they are able to do this. (2)

42. Do transient or resident orca have more persistent toxins in their blubber? Why? (2)

43. Why is there such concern about the group of chemicals known as the brominated fire retardants or PBDEs? (2)