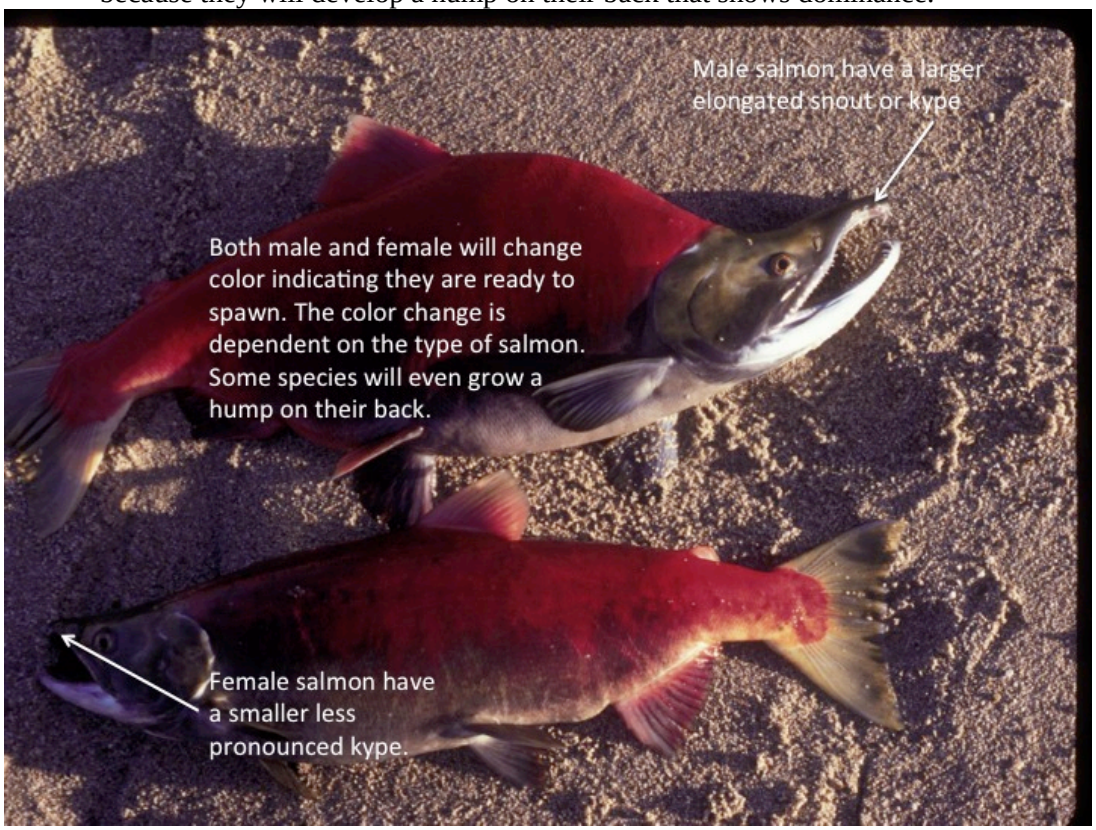
Student Response Sheet: Can you identify me?
Salmon Identification

Background Information: There are many different species of salmon that live in Alaska; each one is genetically different than the next, even in minor ways. All salmon will return to the river or lake where they were born to spawn. Salmon are a unique fish in that they are one of the only fish born in freshwater, migrate and grow to adulthood in saltwater, and return to freshwater to reproduce. Once they enter the freshwater again, they stop eating. The adult spawning salmon will die shortly after they reproduce. Male and female salmon will undergo some changes as they progress upstream back to freshwater. There are a few key differences between freshwater adults and saltwater salmon.

1. Spawning: You have seen the term spawning a lot. Spawning means the salmon are ready to reproduce, they have reached sexual maturity and have undergone "puberty". The spawning salmon will be migrating back to freshwater to mate and produce offspring. The female salmon will create a redd (a nest in the gravel or sand for her eggs) by flipping her tail sideways to create a hole. She will then lay her eggs in the redd. The male salmon will swim beside her and release milt (sperm) to cover the eggs. The eggs are low enough in the gravel that they don't get washed away. Shortly after spawning the adults will die.
2. Kype: A kype is an increased jawbone on a male salmon who is ready to reproduce. The male salmons body will go through drastic changes as it becomes sexually mature. The front of the mouth will lengthen and many jagged teeth will start to form as the male salmon matures. The more dominant the fish, the bigger the kype. If a male salmon is very dominant, it can mate with more than one female.
3. Other changes: Some species of salmon will undergo other changes. Most species will change color to be more attractive to their mate. The pink and sockeye salmon are unique because they will develop a hump on their back that shows dominance.



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Instructions: Wildlife biologists, among other things, spend hours pouring over videos of salmon to get a better idea of how many salmon are passing though the watersheds, what kind of salmon are more prevalent, and how many have escaped the commercial fishermen. There are lots of opportunities for the biologist to count salmon at the counting towers on the Newhalen River or watch them swim through the weir at Telaquana. It is your turn to act as a wildlife biologist and identify the species and gender of each salmon as they are swimming through the weir. This footage is actual footage that scientists see and work with every day. Good Luck! The first few are done for you. When you have gone through the video and determined the gender and species, answer the questions about evolution and salmon.

- Species you **MAY** see: Chinook (king) salmon, Coho (silver) salmon, Pink (humpy) salmon, Chum (dog) salmon

Clip/Fish	Gender	Species
Practice 1/fish 1	Female	Coho
Practice 1/fish 2	Female	Coho
Practice 1/fish 3	Male	Coho
Practice 2/fish 1		
Practice 2/fish 2		
Practice 2/fish 3		
Practice 2/fish 4		
Practice 2/fish 5		
Clip 1/ fish 1		

Clip 1/ fish 2		
Clip 2/ fish 1		
Clip 2/ fish 2		
Clip 3/ fish 1		
Clip 3/ fish 2		
Clip 3/ fish 3		
Clip 4/ fish 1		
Clip 5/ fish 1		
Clip 5/ fish 2		
Clip 5/ fish 3		
Clip 5/ fish 4		
Clip 5/ fish 5		
Clip 5/ fish 6		
Clip 5/ fish 7		
Clip 5/ fish 8		

Respond: Read through the following questions and answer them in complete sentences and complete thoughts. Please do not respond before you have considered all of the options and have thought through each of the possibilities.

1. Wildlife biologists have many jobs, what other tasks might wildlife biologists who work with fish be responsible for? What might they do?
2. How might scientists use the information they gather from watching videos to decide how many fish a fisherman can take every year?
3. Often times biologists will sit for hours classifying salmon and making hypothesizes for the overall numbers of each species of salmon headed to their spawning grounds. Develop a better plan for scientists to use to identify salmon by gender and species.
4. Distinguish between male and female salmon.
5. How are the changes in spawning salmon similar to puberty humans undergo? Justify your reasons.
6. List and justify some examples of similar anatomical structures between salmon species. List and justify examples of anatomical structures that are unique to each species.
7. Using empirical evidence (observational evidence) explain how salmon have probably evolved from a common ancestor.
8. Hypothesize why salmon have evolved into different species if they are all using the similar resources and spawning grounds. Justify your response.
9. What other information might you need to prove salmon are genetically diverse species? What other evidence would you need to collect to make your assumptions of unique species valid?
10. Based on the images you have seen (empirical evidence) and the sheets you have to use, create a clade that shows the relationship between salmon.