Introduction (2:23-3:35)
1. In which season do the gray whales begin arriving in the Arctic? summer
2. What has recently happened to the gray whale population? one-third of the population has mysteriously disappeared
3. How long is the gray whales’ migration? 12,000 miles round trip
4. Where do the gray whales migrate from and to? from the Arctic to Baja California, Mexico
5. Where in the ocean do gray whales feed? (on the ocean floor)

Feeding (3:36-6:30)
1. How long does the sun shine in the Arctic summer? 24 hours a day
2. How will the team get a firsthand look at the gray whales’ food? collect samples of mud from the ocean floor
3. How do gray whales alter the environment when they feed? they create underwater trenches
4. What is the visibility underwater? zero
5. How did the divers know that they were in the right spot? they were in one of the trenches the whales had created
6. What species are the gray whales feeding on? amphipods
7. How many amphipods did the marine biologist find in the mud sample? 10
8. Do gray whales have teeth? no
9. Describe the mouth of the gray whale. bottom jaw is just gums; all along the top jaw are plates of baleen
10. What is baleen made of? keratin, just like our fingernails
11. How do gray whales use their mouth when they feed? they open their huge mouth, bring in a mouthful of water and close their mouth, then use their tongue to squeeze the water out through the baleen, leaving the arthropods behind, stuck to their baleen
12. What is the last part of feeding? they use their tongue to lick off the arthropods from their baleen

Magdalena Bay (6:33-8:50)
1. What could the sudden disappearance of one-third of the gray whale population be linked to? depleted/poisoned food source and obstacles along migration
2. Where do gray whales go to mate, give birth and play? lagoons of Baja California, Mexico
3. Where do the researchers begin tracking the whales? Magdalena Bay
4. What do the divers find when they investigate what whales’ feeding behavior looks like? a sea floor that has no food for the whales
5. What does this confirm for the divers? that the whales are not here to feed
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6. What does diver Matt find on and pick up from the sea floor?  
a patch of whale skin

7. What is the gray whale usually infested with?  
a lot of parasites attached to its skin

8. Why do gray whales need a rubbing beach?  
so they can scratch their skin and possibly remove some of the parasites

San Ignacio Lagoon (9:00-11:59)

1. What does the bracelet mean that Don Santee has to have on?  
that you are in a protected area

2. What do the Ocean Adventures team members see when they go to the lagoon?  
breaching, mating and many other behaviors

3. What happened in 1972?  
gray whales started approaching boats

4. What percentage of fat is the milk that the calves nurse on?  
50 percent fat

5. When do calves part from their mother and fend for themselves?  
when they are 7 months old

6. How was San Ignacio recently threatened?  
a major corporation and the Mexican government wanted a massive salt mine project to improve the economy

7. "Good environmental policy 100 percent of the time is ________ to good economic policy."  
identical

Satellite tagging (12:00-15:50)

1. How do whales travel once they leave the Arctic?  
hidden below the surface except to breathe

2. What is satellite tagging?  
shooting a tag into gray whales to aid in tracking the whales from space using a satellite and a transmitter

3. What do the tags allow the researchers to do?  
track the latitude and longitude of the whale

4. What good update did Jean-Michel Cousteau get during the two days of tagging?  
that they tagged four whales

5. When looking at the GPS coordinates, what direction do the researchers see the gray whales traveling?  
north

6. Why are the mothers and calves the last to leave the lagoon?  
waiting for the calves to gain strength

7. Why might all the tags have stopped transmitting?  
rubbed off by calves on the sandy bottom

8. What is the team's backup plan?  
to follow the whales the hard way -- visually
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### Whale watching (15:51-19:48)

1. "The gray whale has evolved to _________."  
   hide
2. What does the team find south of Los Angeles?  
   expert whale watchers -- the American Cetacean Society
3. What are the two key things that the American Cetacean Society (ACS) looks at to determine how many gray whales there are?  
   timing of the migrations, how many calves are surviving
4. What do researchers think gray whales use oil rigs for?  
   point of navigation
5. How many miles a day can a gray whale cover by swimming constantly?  
   80 miles a day
6. What happened to the calf count after gray whales were taken off the endangered species list in 1994?  
   first year they were fine, second year numbers dropped and researchers don’t know why
7. By tracking pictures, what did researchers determine about the size of gray whale going north and going south?  
   whether the whales were well fed when they began their migration and how much weight they lost from the migration and from giving birth

### Killer whales (19:50-27:30)

1. What does Nancy Black's research link to the high number of killer whales?  
   seasonal presence of gray whale calves
2. What is the most intense natural obstacle that the gray whales encounter?  
   killer whales
3. What is a great food source for killer whales?  
   gray whale calves
4. How many killer whales can one gray whale calf feed?  
   20 to 30
5. Why is it important for killer whales to teach their calves how to feed on gray whales?  
   important to their culture and to their survival
6. Which two ways do gray whales travel when they cross Monterey Bay to continue heading north?  
   the long way around hugging the shoreline of the bay or the shortcut straight across the bay over Monterey Canyon
7. How do the researchers think killer whales find the gray whales in the deep water?  
   they patrol the canyon listening for the gray whales
8. "These whales have lost the safety of the ________ as they enter deep waters."  
   shore
9. How do orcas kill a gray whale calf?  
   lunge on top of and separate it from its mother, then bash it from the underside to give it internal injury
10. How do orcas eat the calf?  
    working together underwater, one holds the carcass while the others strip off the blubber; they don’t compete or fight
11. Why was the 2004 season unprecedented?  
    because of the high number of attacks: 16 attacks, 12 kills, only four escapes
12. "When we see fewer calves born, then we see fewer attacks and fewer ________ whales in the area."  
    killer
13. How many of the calves born will not survive the trip north?  
    one-third
Depot Bay (29:20-36:44)
1. What does the gray whale need in order for its population to completely recover? a dependable source of food
2. What do the whales do when they get to Depot Bay? stop
3. What are the gray whales called that stop at Depot Bay? resident whales
4. What does Carrie Newell have to do to prove her theory about resident whales? identify specific whales that stay to feed at Depot Bay and return every year
5. How many residents has Newell documented? 56
6. The sample revealed that __________________________ is sustaining the resident whales. mysid shrimp in the kelp
7. What did Newell find when she took a sample of the gray whales’ fecal material? mysid shrimp fragments
8. What does Newell say would happen if a bunch of pollutants were dumped in the waters of Depot Bay? mysid shrimp would die; whales, rock fish and salmon would suffer; and the economy of Depot Bay would suffer
9. What is the name of the whale that has been shot by a harpoon? scarback

Photo ID (36:45-41:35)
1. How many gray whale identifications have the researchers made? more than 6,000
2. What part of the whale is used for identification in this photo I.D. technique? natural markings on sides and tails of the whales
3. What have researchers confirmed by identifying individual whales? that resident whales range from Northern California to British Columbia
4. What is the estimated survival rate for the resident whales from year to year? 95 percent
5. What new obstacle have gray whales encountered by feeding in the waters of the state of Washington? Native Americans seeking to hunt
6. What did the Makah people of Washington do in 1999? killed their first gray whale in 70 years; they said they were invoking treaty rights of 1855
7. Why did the Makah people say they needed to kill this gray whale? cultural reasons, failing tradition and ancient pride
8. How many other tribes have signed up for permits to kill their own gray whales? 17
9. How did the male juvenile gray whale lose its life? got tangled in different types of netting; whale probably spun around and got caught
Acoustic pollution (41:36-44:59)
1. What is the new invisible form of environmental pollution?  
   acoustic pollution
2. What kind of human activities are heard underwater?  
   underwater explosives, commercial shipping, high-frequency sonar, oil development, intrusive scientific research
3. What does high-frequency sonar do?  
   interferes with behavior, causes standing and death
4. What do the researchers notice happens to killer whales when the military turns on mid-frequency sonar in the ocean?  
   they react negatively and can become beached

Global warming and other concerns (45:00-end)
1. "The waters off Point Burrow once sustained an entire _______."  
   culture
2. Where else in the world is whaling going on?  
   Russia; aboriginal whaling in Alaska; Greenland; the Caribbean
3. What is the gray whale most threatened by?  
   global warming
4. What effects of global warming do people of this area see?  
   retreat of the main ice pack, main ice pack breaking up, erosion problems, polar bears roaming, less ice in water, can't walk on ice
5. What did the older resident say was good about global warming?  
   warmer, use less gas, save money, better for the economy
6. Over the past three decades, how much of the gray whale's food source has been lost due to global warming?  
   30 percent
7. What are the many different threats and hazards that affect the gray whale population?  
   use of military sonar, human thirst for petroleum, increased number of ships in ocean, loss of food related to global warming and pollution, pollution on whales themselves, harassment, development
8. What are the goals for saving the gray whale population?  
   to increase awareness of threats to whales, to get decision makers to make better decisions, to increase public support for science, to pass on to the next generation something as good as, if not better than, what we started with