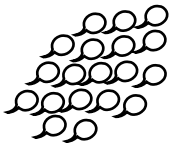
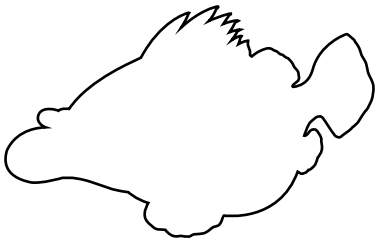


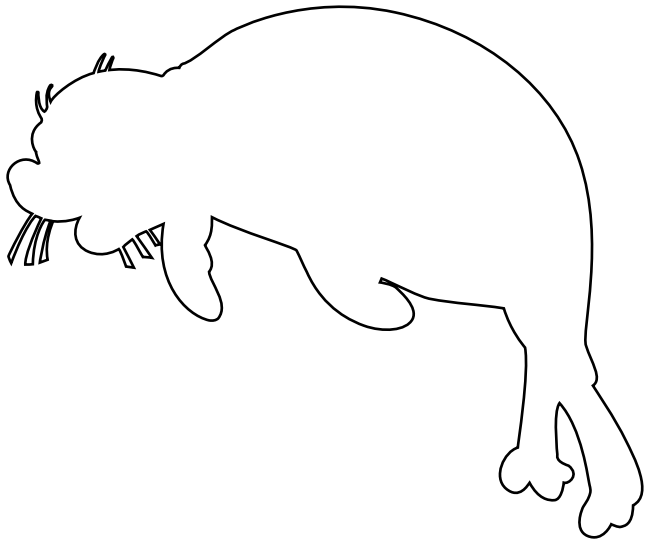
PLANKTON

Toxins like mercury and pesticides
are absorbed by plankton.



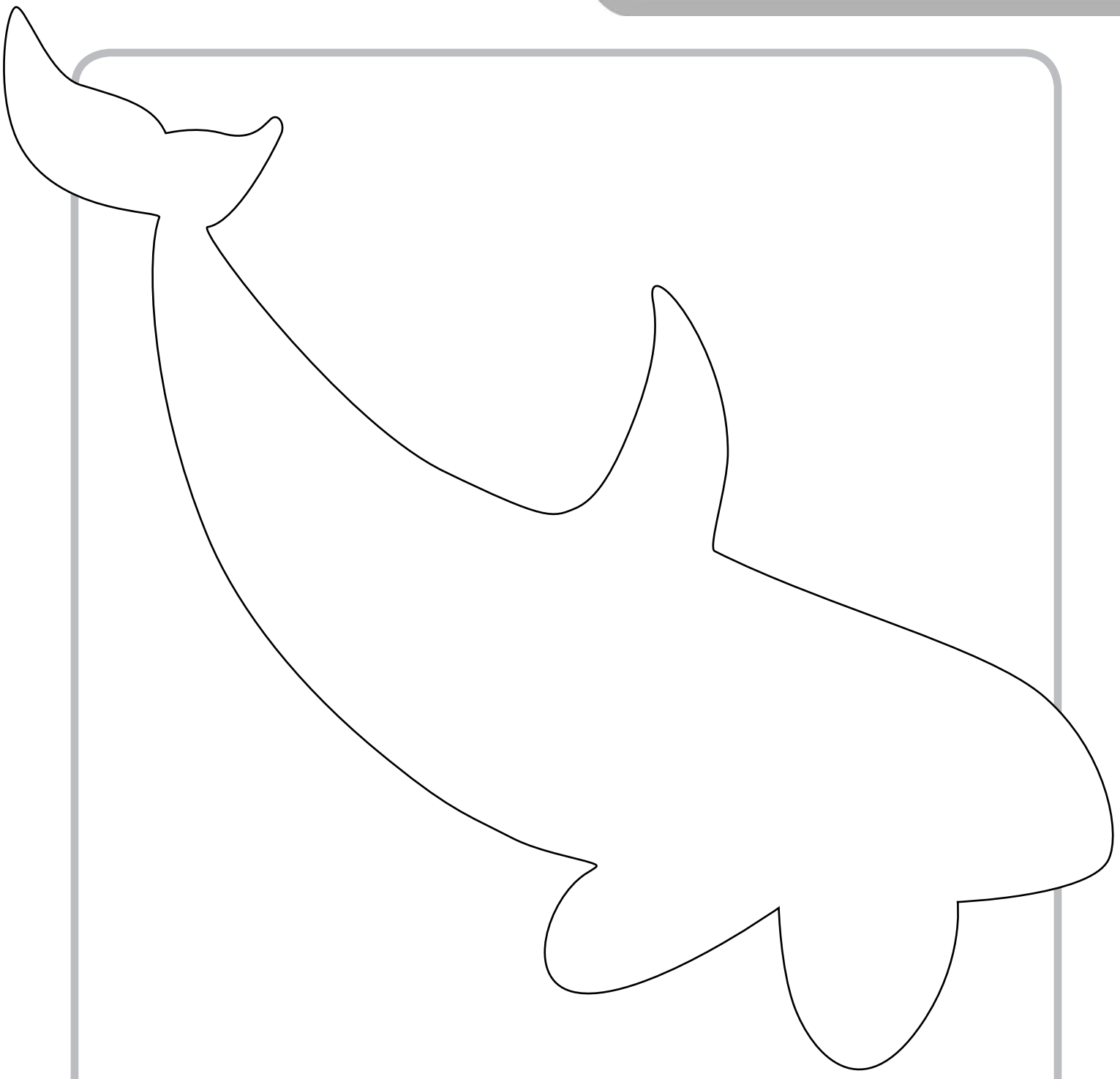
FISH

Fish eat lots of plankton, which have absorbed toxins.



SEALS

Seals then eat lots of fish, which have eaten the plankton, which have absorbed toxins.



KILLER WHALE

The toxins are magnified in the killer whale.
At the top of the food chain, the killer whale eats lots of seals, which ate lots of fish, which ate lots of plankton, which had absorbed a lot of toxins.

Marine Mammal Issue CARD

Orcas

Keiko's World By WYLAND

When it comes to chemical pollution, the bigger the animal, the bigger the problem. In no case is that clearer than in the community of killer whales that live in the Pacific Ocean off the coasts of British Columbia and Washington state. Killer whales, also known as *orcas*, are some of the most impressive mammals in the sea. They also are some of the hardest hit by pollution. The 85 resident killer whales that swim between Georgia Strait and Puget Sound are considered some of the most polluted marine mammals in the world. Their bodies are contaminated with chemical pollutants like PCBs and DDT, which were banned years ago but are still in the environment. These chemicals have accumulated in the whales' blubber through biomagnification. As a result, the whales have problems reproducing, lowered immunity to diseases, and disruptions to the endocrine system, which produces hormones necessary for good health.

Marine Mammal Issue CARD

Manatees

Manatee Encounter By WYLAND

Off the coast of Florida, the water can sometimes look a dark, reddish color. When that happens, it's called a *red tide*, and it is caused by an overgrowth of algae. Recently, red tides have been occurring more often. The algae produce toxins that can kill fish, sea turtles, birds, and marine mammals such as manatees. The worst part is that there is evidence that the toxins stay in the environment long after the red tides disappear. Constant exposure to the toxins causes health problems for the manatees. Specifically, the toxins target their lungs and cause them to go into shock and eventually die.

Marine Mammal Issue CARD

Sea Otters

Sea Otter Seas By WYLAND

Cat feces contain a tiny parasite that is killing sea otters off the coast of California. Since cats live on land, how is this possible? Well, freshwater runoff washes feces from backyards, streets, and illegally dumped kitty litter into streams, rivers, and ultimately, the ocean. Studies have shown that otters living near freshwater runoff are much more likely to be infected by the parasite. The parasite causes otters to shake, become uncoordinated, and have seizures. It is the primary cause of death in some otter populations living along the coast.

Marine Mammal Issue CARD

Sea Lions

Photography By WYLAND

California Sea Lions are dying of cancer at an alarming rate. Studies show that pollutants are one of the main causes of the cancer. The pollutants accumulate in the food that the sea lions eat, such as anchovies, squid, and mussels. The pollutants then build up in the sea lions. The cancer caused by the pollutants spreads throughout their bodies, eventually ruining their spinal cords, paralyzing them, and causing them to wash up on shore.

Marine Mammal Issue CARD

Bottlenose Dolphins

Photography By WYLAND

The Atlantic Bottlenose Dolphins, which live in the Indian River Lagoon in Florida, are coming down with unusual diseases such as hepatitis, meningitis, and pneumonia. Scientists suspect that high concentrations of pollutants from sewage or other sources, toxins from red tides, and other factors, may be a big part of the problem. Studies are underway at the Harbor Branch Oceanographic Institute to determine why the dolphins are getting sick. The scientists at HBOI are studying water quality and the conditions in the habitat. They are doing medical examinations of the dolphins on a regular basis to try and solve the mystery.

Marine Mammal Issue CARD

Beluga Whales

Photography By WYLAND

Some of the Beluga whales that live in the St. Lawrence River have so many toxins in them that when they die, their remains must be handled as toxic waste. Tumors, cysts, cancer, and bacterial infections are affecting the health of this beluga population. In the early 1900s, there were about 7,000 beluga whales in this area; now there are about 700. The waters of the St. Lawrence River are polluted due to many years of industry dumping, dredging, and shipping. Runoff from farms are at least partially to blame, as well.

NAME:

DATE:

1. What marine mammal (or other animal) are you studying?

2. What are the symptoms that this animal is showing?

Describe or draw this animal's food web.

3. What do scientists think might be causing the problem?

4. What do you think is the cause, and is there anything people can do to help?

NAME:

DATE:

Page 1 (Plankton)

Page 2 (Level 2 in the food chain)

Page 3 (Level 3 in the food chain)

Page 4 (Level 4 in the food chain)