Environmental Concerns

1. Easter Island
   1. Summary on Left Side
2. Marine Pollution

--\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the introduction into the ocean by humans of \_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_ that changes the quality of the water or affects the \_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ environment. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the most dangerous threat to the marine environment.

--Not all pollutants are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ release tons of pollutants into the air and water.

--The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ had already begun by the time \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ became a science. The only “natural ocean” conditions we can study are frozen into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* 1. Characteristics of a pollutant

--\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of ocean pollution comes from human activities on land.

--A pollutant causes damage by interfering directly or indirectly with the \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of an organism. Some damage \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, while other types \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Damage can occur to an \_\_\_\_\_\_\_\_\_\_\_\_\_\_ or to an entire \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

--\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the pollutant combine to affect \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

--Some pollutants are dangerous in \_\_\_\_\_\_\_\_\_\_\_\_\_\_ like \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

--\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of a pollutant is also an issue. Some may last \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, while others break down \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pollutants are broken down \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

--It is difficult to predict or explain environmental impact, so opinions vary widely about the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Media reports sensationalize \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ while ignoring \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Ex. BP v. Global Warming, Overfishing

* 1. Oil

--Oil naturally \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ into the ocean \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

--Oil entering the ocean is increasing greatly because of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from automobiles.

--\_\_\_\_\_\_\_\_\_\_\_\_\_ of the world’s annual oil usage is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ over the ocean.

--Out of the 6.6 million tons of oil entering the ocean every year, only 10% is from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. One third of the total oil pollution is from \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. You hear about the accidents, but not the oil spilled during \_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of tanker ships.

--Every year, more oil is poured down \_\_\_\_\_\_\_\_\_\_\_\_ than is spilled in \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

--Between 150,000 and 450,000 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are killed yearly by tanker oil.

--\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of used motor oil finds its way into the sea each year. Because it has already gone through an engine, it is much \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than \_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ oil.

--\_\_\_\_\_\_\_\_\_\_\_\_\_\_ oil is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and not very toxic. A moderate crude oil spill takes about \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to recover from.

--\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ oil spills are not as common, but take longer to overcome. Some refined oil spills have taken over \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to recover from.

--\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ form and end up on the sea floor to biodegrade. This can cause problems for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ organisms.

--In 1989, the *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* dumped 11 million gallons of oil off the coast of Alaska when it ran aground. It was the 3rd worst spill in U.S. history, but only the \_\_\_\_\_\_\_ worst spill \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

--Clean up efforts are usually \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than just leaving the oil there to naturally break down. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ used to break the oil down are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to marine life.

--Oil pollution solutions are better \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that release less operational oil, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and better crew \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* 1. Heavy metals

--Heavy metals interfere with normal \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

--\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_ are four major heavy metals in the ocean.

--Human activities release \_\_\_\_\_ times more mercury and \_\_\_\_\_\_ times more lead than natural processes. There has been a dramatic rise in mercury and lead poisoning in the last \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Ex. Minamata (Summary on Left Side)

--\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is so toxic to marine animals, it is used in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_, to keep the boats pest free. Copper spills have severely damaged \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ off the California and Dutch coasts.

--\_\_\_\_\_\_\_\_\_\_\_\_\_, once used in hull paint (like copper), but now banned, is still accumulating in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, suppressing their immune systems. Large amounts of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ found in stranded small whales.

* 1. Synthetic organic chemicals

--\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ enter the ocean and are incorporated into organisms. These compounds resemble \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in nature, so they are not naturally \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Small amounts of these compounds are enough to cause illness or even death. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ book *Silent Spring* began the environmental movement against these poisons.

--Halogenated hydrocarbons are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ compounds containing \_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_. They are used in pesticides, flame retardants, industrial solvents, and cleaning fluids.

--\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ hydrocarbons are the \_\_\_\_\_\_\_\_\_\_\_\_\_ halogenated hydrocarbon, causing birth defects in babies born from women eating fish twice a week.

--Levels in seawater relatively low, but concentrates as it moves up the food chain. (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)

--\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and osprey disappearance in the 1960s led investigators to \_\_\_\_\_\_\_\_. A common pesticide at the time, DDT caused the eggs of these birds to become brittle, breaking before the babies could hatch. \_\_\_\_\_\_\_\_\_\_\_\_\_ put DDT in the oceans. Plankton absorbed the DDT. Small fish ate the plankton, while large fish ate the small fish. Then pelicans ate the large fish. DDT concentrations \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ up the food chain, affecting the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the most.

--DDT was \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the U.S., but is still present in the \_\_\_\_\_\_\_\_\_\_\_\_\_ in which it was used over \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

--Polychlorinated biphenyls (\_\_\_\_\_\_\_\_\_\_\_), used to be used as a cooling agent in electrical devices, and to strengthen wood and concrete. It is responsible for affecting the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of humans as well as seals and sea lions, damaging the immune systems of dolphins, and causing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in humans.

--Illegal \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is also responsible for environmental harm. Drug boats use cyanide based chemicals to mark off drop spots, killing off fish, whales, and dolphins. The chemicals \_\_\_\_\_\_\_\_\_\_\_\_\_, which draws fish and squid in to be killed by the chemicals. The corpses are eaten by larger creatures, amplifying the damage.

* 1. Eutrophication

--When excessive \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are released into the ocean, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ occurs. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ fertility can be just as dangerous as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. It destroys the natural \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of species in the ocean.

--Wastewater treatment plants, factory effluent, accelerated soil erosion, and fertilizers spread on land enter the ocean as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are particularly \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to eutrophication.

--Fish, shrimp, and other marine animals suffocated off the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ coast in 1999 when an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ occurred from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ running into the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ River.

--Red tides, yellow foams, and thick green slimes are all caused by eutrophication, and are all causes of “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.” Some are toxic; some just remove all the oxygen from an area. Low oxygen content (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) is responsible for more fish deaths than any other single agent (including oil spills).

--Large algal blooms are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Not reported before the 1930s, we have at least \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. In 1998, \_\_\_\_\_\_\_\_\_\_\_ of Hong Kong’s fish farms were wiped out by a massive bloom. China reported losses of $240 million from \_\_\_\_\_\_ harmful algal blooms in a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* 1. Solid waste

--Some \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is ultimately biodegradable; the problems are the solids \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. 10% of all solid waste is made up of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which can take over \_\_\_\_\_\_\_\_\_ years to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Americans generate 1100 pounds of plastic waste per person per year. 75% of debris pulled out of the ocean is plastic, with glass and paper making up another 15%. Each square mile of ocean is estimated to have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pieces of plastic floating on the surface. 100,000 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and 2 million \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ die each year from ingesting plastic. Six pack rings have almost been totally removed from the market, with vendors switching to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

--1n 1999, the average \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ threw away a ton (2000lbs.) of waste a year. \_\_\_\_\_\_\_\_\_\_\_ generates enough trash to fill Dodger Stadium every \_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are reaching capacity. 10% of our trash is burned, but that puts harmful chemicals into the air and the ash \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

--\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is one possible solution. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ recycles \_\_\_\_\_\_\_\_\_ of their solid waste, and actually imports scrap metal and waste paper from other countries. Boxes and cartons for new products are continually being made from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

--A combination of \_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ old materials, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_ the amount of trash we make is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ we will have of overcoming solid waste pollution.

* 1. Sediment

--Runoff from \_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and other land uses contain large amounts of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Sediments cloud the water, impeding \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for organisms vital to the food chain. Sediments from poor \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ practices and uncontrolled \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ development are destroying reefs and impacting fisheries.

* 1. Sewage

--\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ gallons of partially treated sewage pours from cities like Boston and L.A. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. After heavy rainstorms, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ routinely makes its way into the ocean. U.S. shorelines become so polluted that swimmers and surfers run the risk of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ just from being in the water. Besides human sewage, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from farms and ranches is also released into local water supplies.

--98% of sewage is \_\_\_\_\_\_\_\_\_\_\_\_\_. The other 2% is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ containing bacteria and viruses, \_\_\_\_\_\_\_\_\_\_\_ metals, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ organic chemicals, and other debris.

--Processing removes \_\_\_\_\_\_\_\_\_\_\_ from the \_\_\_\_\_\_\_\_\_\_\_ waste. The fluids are treated to kill diseases and destroy nutrients, and then released into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The remaining solid sludge is shipped to \_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_ for electricity, or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ into the ocean. Sludge contaminates animal stocks near shore, causing disease outbreaks from time to time. Communities of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ organisms near sewage outfall sites are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, but animals that are generally not found in these regions are present. \_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ contribute to eutrophication.

* 1. Waste heat

--\_\_\_\_\_\_\_\_\_\_\_\_ is used to cool \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. When released, it can be \_\_\_\_\_ warmer than before, causing aquatic animal kills as well as eutrophication. The warm water interferes with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_efficiency of marine organisms. Some factories and plants are pumping in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from offshore, so it leaves the plant at the proper temperature. This method only harms animals and plants sucked up into the plants. Ex. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: 11/05/2010 - Fairfield Lake experienced a severe fish kill in August 2010, when warm water and cloudy days led to a shortage of oxygen in the water. Results of the most recent survey indicate that effects of this kill are still having an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* 1. Introduced species

--Organisms which get \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ into ballast tanks \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ get carried across oceans they naturally would never be able to cross. These species sometimes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ native species, reducing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and even causing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Fish farms and canals \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ that cause these same problems.

--The Chinese mitten \_\_\_\_\_\_\_\_\_\_ and *Calerpa* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are introduced species that are causing problems. The crab \_\_\_\_\_\_\_\_\_\_\_\_\_\_ into levees and riverbanks, causing them to \_\_\_\_\_\_\_\_\_\_\_\_\_\_, while *Calerpa* is just outcompeting every other plant around. Lack of biodiversity leads to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ when outside stresses occur.

* 1. The costs of pollution

--The U.S. spends over \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ annually to control \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pollution.

--Pollution threatens \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, destroys \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, produces a greater \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ between “rich” and “poor” nations, and reduces the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of people worldwide.

1. Habitat Destruction
   1. Bays and estuaries

--\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are productive coastal areas at the mouths of \_\_\_\_\_\_\_\_\_\_\_ where \_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ meet. Runoff impacts estuaries more than \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

--The U.S. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is one of the most polluted bodies of water on the planet. 40% of the nation’s most productive \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (including the most valuable \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) are in the Gulf. 60% of Gulf \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ harvesting are either \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ due to toxic levels of pollutants. Half of the Gulf is \_\_\_\_\_\_\_\_\_\_\_ from oyster harvesters because of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

--Runoff on the Atlantic coast has killed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which serve as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for many marine species.

--Bays and estuaries are also developed into \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ areas, increasing the amount of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, while decreasing the available “clean” area.

* 1. Coral reefs

--Increasing amounts of pollution seem to be linked to recent \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, in which coral lose their ability to photosynthesize and die off. Massive \_\_\_\_\_\_\_\_\_\_\_\_\_ have been linked to these bleaching events.

--\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is used in some areas to fish for hard to reach \_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the reefs.

* 1. Other habitats

--\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are being cut down and converted into mariculture sites, reducing the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the area and wiping out a natural \_\_\_\_\_\_\_\_\_.

--\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mining is causing irreparable damage to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. Marine Sanctuaries

--In \_\_\_\_\_\_\_\_\_\_\_, the U.S. set aside \_\_\_\_\_\_ marine sanctuaries. These areas are deemed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by law. They are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_ migration paths, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ archaeological sites, deep \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and a few just for their \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. Global Changes

--\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pollution directly affects the \_\_\_\_\_\_\_\_\_\_\_\_, because they are so closely linked.

* 1. Ozone layer depletion

--\_\_\_\_\_\_\_\_\_ occurs \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the atmosphere. The ozone layer extends from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ above the Earth’s surface. \_\_\_\_\_\_\_\_\_ (chlorofluorocarbons) used in cleaners, refrigeration, fire extinguishers, spray can propellants, and insulation are converted by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ into ozone attacking compounds. \_\_\_\_\_\_\_\_\_\_\_\_\_ drops in the ozone level have been recorded over continents, with \_\_\_\_\_\_\_\_\_\_ depletion occurring over \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

--Ozone protects the Earth from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which damages \_\_\_\_\_\_\_\_\_ and causes \_\_\_\_\_\_\_\_\_\_\_\_\_\_ to break down. Phytoplankton, a huge link in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, are damaged and killed by \_\_\_\_\_\_ exposure. Land crops are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ before they are ripe enough to be harvested. \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ occurrences increase 7% for every 1% of ozone depletion. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are also related to ozone depletion.

--\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ has been enacted to reduce the number of \_\_\_\_\_ produced and used worldwide. Ex. Freon used to be used in car AC units, now a non-CFC refrigerant is used. Pump bottles began replacing aerosol spray cans.

* 1. Global warming

--Global temperatures \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. There has been \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the Earth’s temperature since the last ice age \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ years ago.

--The greenhouse effect is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the atmosphere. Greenhouse gases like CO2, H2O(g), CH4, CFCs, and others work like \_\_\_\_\_\_\_\_\_\_\_ in a greenhouse, letting \_\_\_\_\_\_\_\_\_\_\_\_\_, but not letting \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

--The greenhouse effect is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The Earth would be \_\_\_\_\_ without it. Greenhouse gases are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ created by the Earth’s mantle, released through \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ events. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and absorption \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ reduce these gases. Humans, in our need for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, create more CO2 than the ocean can absorb, through the burning of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

--Even though CFC levels are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, methane levels are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from cow and termite \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_ of trash and vegetation.

--There has been a \_\_\_\_\_ increase in global temperatures since the last ice age, and 1.5°F in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. That’s a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on the world climate scale.

--The polar ice sheets are \_\_\_\_\_\_\_\_\_\_\_\_, causing an \_\_\_\_\_\_\_\_\_\_\_\_ in \_\_\_\_\_\_\_\_\_\_\_\_\_\_. Phytoplankton are 9% less efficient, leading to less greenhouse gas \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, creating a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ feedback loop.

--In the last century, industry has increased \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Reduction will be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, at best.

--In 1997, world powers met to plan CO2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The U.S. agreed to reduce emissions by 7%, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is currently being penalized for not meeting these goals.

--Alternative energy sources are needed, with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ being the only significant contributor to the energy solution that doesn’t produce carbon dioxide. Nuclear \_\_\_\_\_\_\_\_\_\_\_\_\_ in the form of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ takes \_\_\_\_\_\_\_\_\_\_\_\_ years to become harmless. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from these wastes causes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and must be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for public safety.

--Currently, the population of the Earth doubles every \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. What Can Be Done?
   1. Summary on Left Side