The Eroder

This villain is based on erosion. This occurs when water runs over soil, rocks, and other parts of the land shaping it. Erosion is a problem in farm fields and along the riverbanks when soil moves into the waterway. In turn, this can cause problems with light infiltration of water and lower the integrity of land formations causing other issues. Erosion can also occur through the movement of wind as it blows over land and moves other objects around. An example of historic wind erosion is the Dust Bowl.

Dr. Bloom

This villain is based on runoff and nutrient pollution. This type of environmental problem occurs from cities, farms, homeowners, and factories dumping intentionally or unintentionally into waterways. Excess nutrients and chemicals in water can lead to algae blooms, fish kills, plant degradation, and other organism death.

Raider and Looter

This villain is based on aquatic and terrestrial invasive species. An invasive species is a non-native organism that causes harm to the habitat or environment it is in. Since these species are new to the habitat, they have few or no predators but plenty of food. This causes their populations to skyrocket and leads to native species having trouble staying alive. Invasive species can cause new disease outbreaks, altered ecosystems, and environmental damage to crops, animals, and farmland. Though we can help prevent the spread of these organisms, once they are established in a habitat it is both expensive and challenging to remove them.

Crudella

This villain is based on an oil spill and the different types of oils that can be involved in an oil spill. Oil spills can happen on land or in aquatic environments. These occur when equipment malfunctions and leaks large amounts of oil into the environment. This oil can cause damage to animals as it gets into their lungs, gills, or bodies. It also creates problems with aquatic and terrestrial plants as oil covers leaves and reduces the number of positive nutrients that the plant can absorb. Oil spills can lead to explosions and fires on land and in aquatic environments. Oil pipelines can also produce complications for wetlands, as they are disturbed during construction.

Dead Zone

This villain is based on the Gulf of Mexico dead zone. These areas are created when soil nutrients (fertilizer) run off or leach into local waterways and eventually into larger waterways within the Midwest and Central U.S. leading to the Mississippi River that feeds into the Gulf of Mexico. Nitrates and phosphorus are two of the main nutrients that have caused the dead zone. Though nitrates can break down and dissolve into the atmosphere, phosphorus stays within the ocean sediment. Phosphorus is a promoter of plant growth. Large amounts of plant growth within aquatic areas can decrease oxygen, increase water temperatures, and decrease light to other organisms within the aquatic habitat. In turn, this limits the amount of life in that area. Farmers are utilizing various conservation practices such as buffer strips, cover crops, filter strips, and various others to lower the amount of nutrient runoff and leaching.

Plasticwerewolfe

This villain is based on plastic pollution. Single-use plastics such as bags, straws, and Styrofoam have been found in all parts of the world, even in areas where humans have not settled. Over time these plastics break down releasing chemicals into the water and creating smaller pieces. These small pieces can be eaten by fish and birds causing death or digestive problems. In other cases, plastics have caused the entrapment of animals to change their growth and ability to live. The plastics that make their way into the ocean tend to end up in five different places, known as garbage patches, due to ocean currents.