Evidence #1: Wetlands play a role in the global cycles of carbon, nitrogen, and sulfur. Wetlands change these nutrients into different forms necessary to continue their global cycles.

Chemicals in water can collect in wetlands, where processes change these chemicals into different forms. In addition to their role in the continuation of these globally important chemical cycles, wetlands also play a vital role in cleaning our water by removing hazardous chemicals, materials, and nutrients that can lead to harmful algal blooms.

In the case of the nitrogen cycle, 70-90% of all the dissolved nitrogen that passes through a wetland is actually removed from the water. The removed nitrogen is cycled back into the atmosphere in a step-by-step process.

In the case of the carbon cycle, carbon is stored in wetlands so long as the wetlands remain wet. The breakdown of dead plant material occurs faster in a dry wetland. Therefore, carbon dioxide is released into the atmosphere.

In the case of the sulfur cycle, one form of sulfur is changed into another that either stays in the wetland or goes into the atmosphere.

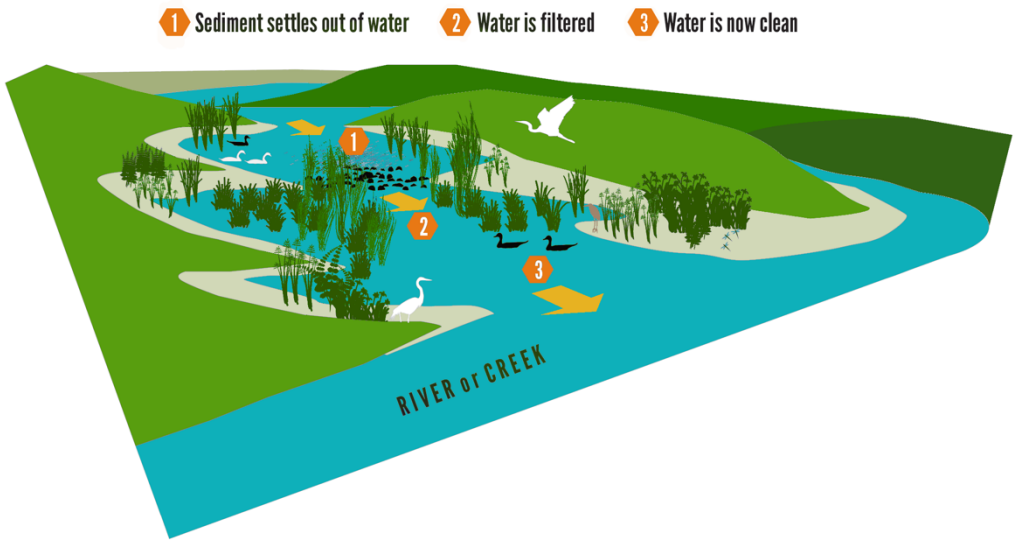

Figure 1.1. (1) Water enters the wetland, allowing for litter, sediment, and other pollutants to settle to the bottom. (2) Water is filtered by micro-organisms and algae that grow on the plants. This removes nutrients from the water, especially nitrogen, to help reduce algal blooms in the nearby bay. (3) After water has spent about three days in the wetland, cleaner water is released back into the creek and water levels return to normal. Wright Seneres.

Figure 1.1 shows that as water flows into a wetland, nutrients are either transformed into less toxic chemicals or removed. Plants in the wetlands can absorb the transformed nutrients. Also, any solid particles suspended in the water will settle out. When nutrients and solid particles are removed, the water becomes cleaner. Wetlands are usually in flat areas where anything in the water has a chance to settle on the plants or in the soil of the wetlands.

Evidence #2: Flooding is a natural occurrence in low-lying areas and wetlands are places where floodwaters can collect.

Wetlands collect rainwater that falls in both populated and unpopulated areas. Because wetlands store large amounts of water, they act as overflow areas for rivers during times of peak flow and can prevent populated areas from being flooded. Figure 2.1 shows how different parts of a wetland habitat can appear. Floodwaters bring nutrients and sediments from other areas that then settles in farms, towns, and cities. Natural flooding can contribute to the livelihoods of those who live nearby, especially those who depend on wetlands for agriculture and other economic benefits. Close to 2 billion people live in heavily populated areas in risk of flooding. If wetlands are damaged or reduced, there is a greater chance that these regions will flood, affecting lives and property. However, sometimes flooded wetlands can lead to harm when insects that cause diseases, such as West Nile virus, breed in the floodwaters.

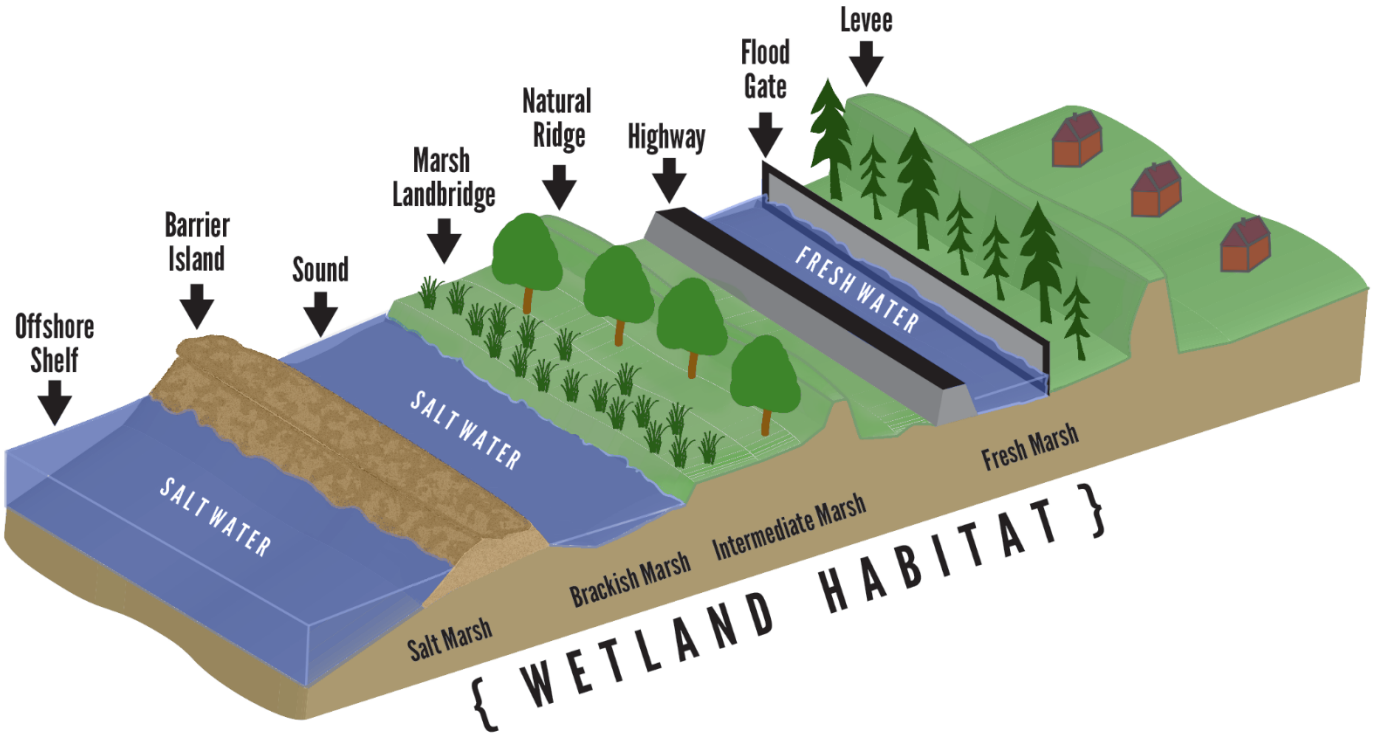

Figure 2.1. Coastal wetlands offer a first line of defense against river flooding and hurricane storm surge. Wright Seneres.

Evidence #3: Wetlands contribute 70 percent of global atmospheric methane from natural sources.

Even though methane does not remain in the atmosphere for a long time, it is a stronger greenhouse gas than carbon dioxide. This means that methane has a greater potential to contribute to global warming. Methane comes from both natural and man-made sources. Figure 3.1 shows the contribution of wetlands as a source of methane compared to other natural (shown as green) and human-caused (shown as blue) sources.

About 70% of the natural methane comes from wetlands globally. Water levels and soil temperatures affect the amount of methane released. When water levels fluctuate in warm areas, more methane is released. In polar regions, more methane is released during warmer summers. Scientists are actively working to better understand the role of wetlands in the production of atmospheric methane.

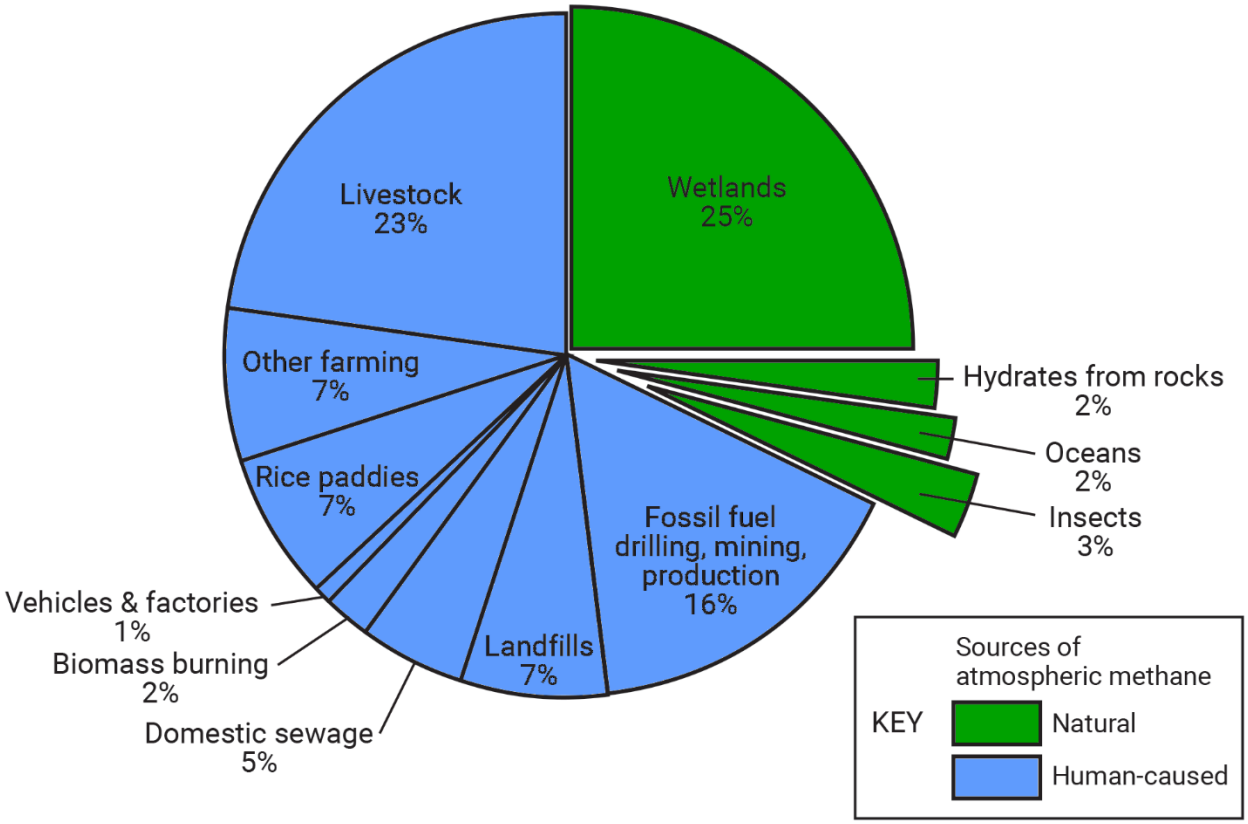

Figure 3.1. Natural and human-caused sources of atmospheric methane.

Wright Seneres.

Evidence #4: Many wetlands are located in rapidly developing areas of the country.

Figure 4.1 shows the locations of critical wetlands in the United States and areas of population growth. Approximately 75% of all wetlands in the United States are privately owned, and yet these landowners are limited in what they can do with their property. Five U.S. government agencies provide definitions of the various types of wetlands, and they also regulate what can and cannot be done with the property. Unless a permit is granted, dredging and filling in wetlands is not permitted.

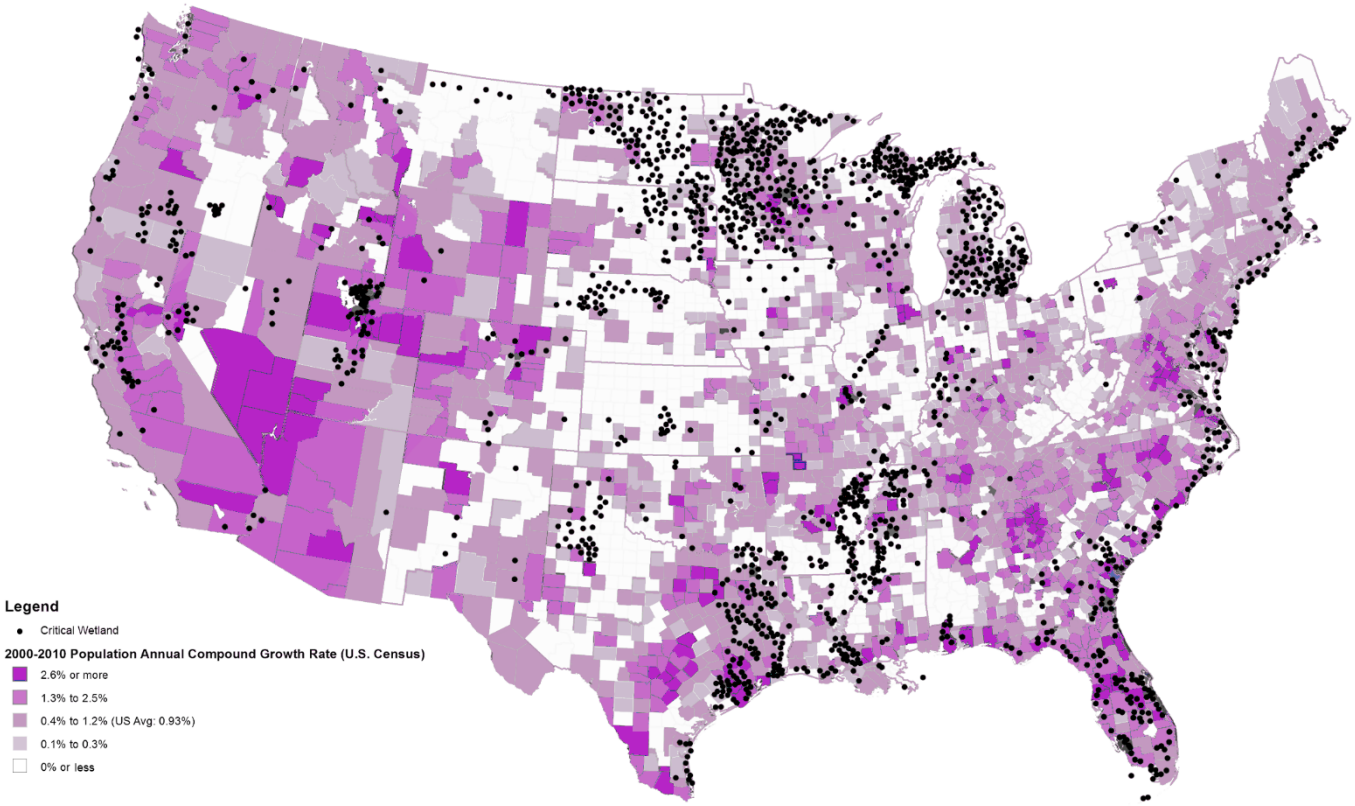

Figure 4.1. Critical wetlands (black dots) within the United States.
Wright Seneres.

States enforce these regulations to different degrees. Compare the areas of population growth with those of wetlands (Figure 4.1). As populations increase, improved infrastructure like roads and bridges are necessary to move people from one location to another. The need for additional housing also makes it necessary to build in less than desirable areas like wetlands. If developers follow the regulations and promise to protect wetlands, then they should be allowed to build on wetlands.