

3. Compare the data for each year to the Dead Zone size map for that year. Does the data support your ranking of the Dead Zone sizes from largest to smallest?

Mixing it Up (or Down?)



Write down any ideas you have that might explain how the surface water could be mixed down to the bottom for such a large area of the northern Gulf of Mexico during the summer.



Did any tropical storms have an impact on the Dead Zone during 2000-2005?

Back to the Beginning



Use your new knowledge and scientific reasoning to put the following statements in order to describe how hypoxia and the Dead Zone develop (example – 3, 1, 6, 5, 2, 7, 4):

1. As bacteria feed on the decomposing phytoplankton they respire (breathe) and use up oxygen in the water, leading to hypoxia
2. Some of the phytoplankton are eaten by other microscopic animals (zooplankton), but others die from natural or other causes and sink towards the bottom
3. Hypoxic bottom water is prevented from mixing with oxygen-rich surface water in the summer because of density differences created by temperature or salinity
4. High levels of nutrients, such as nitrogen and phosphorus, are carried by the Mississippi River into the Gulf of Mexico
5. Phytoplankton (microscopic single-celled algae) in the surface waters of the Gulf of Mexico use the abundant nutrients to conduct photosynthesis and quickly grow and multiply
6. Tropical storms and the cooling of surface water in the winter can lead to mixing of the surface and bottom waters and disruption of the Dead Zone
7. Bacteria in the bottom waters of the Gulf of Mexico feed on decomposing phytoplankton as they sink to the bottom

Answer:

Go Fish....or Shrimp



How might the behavior of fish and shrimp gathering at the edges of the Dead Zone impact the multi-million dollar fishing industry? Try to provide at least one positive and one negative example.

Slow the Flow



Write down three ideas you have that might help farmers to more effectively use fertilizer on their crops, or to help filter out nutrients from the Mississippi River and its tributaries before they reach the Gulf of Mexico.