

Instructor Notes: Unit 5

Impacts and Effects of Eutrophication and Coastal Hypoxia (taken from NSTC 2003)

There are a wide range of potential negative effects resulting from eutrophication, and possible subsequent hypoxia, on the health, and goods and services provided directly and indirectly by coastal ecosystems. Some effects include:

- Decreased light availability, algal dominance changes, and increased organic matter production. These primary symptoms can further lead to degradation of habitat, altered migration patterns, decreased fishery production, and subsequent economic impacts on industries dependent on ecosystem productivity.
- Decreases in swimming, boating, and tourism due to excessive and unsightly blooms of algae. Alterations in these recreational and commercial activities can impact coastal communities vitally dependent on delivery of such ecosystem goods and services.
- Nutrient-induced increases in abundance and growth of toxic algae. Associated algal toxins can result in either human and wildlife illness or death if contaminated seafood is consumed or if windborne toxins are inhaled.
- Anoxia-induced shifts in biogeochemical reactions, such as reduction of sulfate to sulfide in bottom sediments, resulting in release of hydrogen sulfide. Although the chemosynthetic process turns hydrogen sulfide into a food source for some bacteria, it is toxic to most forms of marine life.

National Science and Technology Council (2003), An Assessment of Coastal Hypoxia and Eutrophication in U.S. Waters