

The Stages of Eutrophication and Fish Kills

The Science Behind the “Pond Scum Blues”

High levels of nutrients* over-stimulate the production of surface planktonic algae and floating plants like duckweed (in fresh water) or seaweed (large floating, macrophytic algae in marine habitats).



Surface mat or bloom of algae blocks out light to submerged plants.



Death of submerged vegetation from inability to photosynthesize food and oxygen.



Bacteria multiply to consume all of this extra organic matter.



This uses up nearly all of the available dissolved oxygen in the body of water.



Fish and other animals in the food chain begin to suffocate and die.



The food chain collapses and the pond or body of water “dies.”

***Possible sources of excess nutrients:** (Source: *An Assessment of Coastal Hypoxia and Eutrophication in U.S. Waters*. The National Science and Technology Council Committee on Environment and Natural Resources, November, 2003.)

Urban and suburban sources:

- Municipal wastewater treatment plants are the primary point
- Stormwater runoff from combined sewage systems in older cities
- Septic system failures.
- Fertilizer and pesticide runoff from lawns and golf courses.

Agricultural sources:

- Leaching and runoff of fertilizers and pesticides from farm land and wastes from livestock feeding operations

Atmospheric sources:

- Oxidized nitrogen from coal burning power plants and automobile emissions.