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Ultraviolet-B Radiation Harms Aquatic Life

The first quantitative analysis of published studies on ultraviolet-B (UVB) radiation and water-borne life reveals that UVB causes widespread and devastating damage throughout aquatic ecosystems. Regardless of whether an organism is young or mature, an animal or plant, or lives in fresh or marine water, UVB is harmful. Despite large differences in the design of experiments, their results consistently show that UVB substantially hinders growth and survival.

While there is considerable variation in the magnitude of UVB's impact on survival and growth of aquatic species, a few broad-scale patterns emerge from the meta-analysis of research. Contrary to previous scientific conclusions, this review finds that in marine waters where UVB gets filtered, it is still no less damaging than in clearer freshwater habitat.

Generally, UVB radiation slows growth more in embryos than in larvae. As well, UVB affects growth of single-celled protozoa more than plants or animals. The number of days an organism is exposed to UVB moderates the impacts on growth. But other variables in UVB dose have no consistent outcome.

In organisms living on land and in water, UVB damages chemical compounds in cells, including DNA. This is a mounting concern because depletion of the earth's protective ozone layer in the stratosphere has allowed more UVB radiation to reach the planet's surface.

Reference

Betsy A. Bancroft, Nick J. Baker and Andrew R. Blaustein. 2007. Effects of UVB radiation on marine and freshwater organisms: a synthesis through meta-analysis. Ecology Letters. 10(4): 332-345.

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