UV-B Radiation in Amphibians

What is UV-B?
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One of three types of ultraviolet radiation

- **UV-A (400-320 nm)**
  - Excessively high with vitamin D synthesis
  - Helps with cataracts, helps with vitamin D levels

- **UV-B (320-290 nm)**
  - Slows growth, impairs immune systems, sublethal damage, cell death.
  - Present before (Blaustein and Bancroft 2007)

- **UV-C (290-200 nm)**
  - Most dangerous but blocked by the ozone layer

Impact on Amphibians

Why susceptible?

- Amphibians evolved with UV and seek sunlight for growth and development (Wollmuth et al 1987)
- Thermoregulation (Bradford 1984)
- Larval development (Duellman and Trueb 1986)

Impact on Amphibians

- **VARIES!!**
  - Hatching success lowered (Blaustein et al 1998)
  - Sublethal effects
  - Altered behavior (Blaustein et al 2000)
  - Orientation
  - Locomotion
  - Growth and development
  - Weight and length (Pahkala et al 2001)
  - Anomalies
UV-B affects in die-offs

- Die-offs don’t just occur where human disturbance happens
- Levels of UV-B increased significantly in tropic & temperate regions (Middleton et al. 2001)
- Climate change and habitat destruction increase UV-B exposure

Ozone Hole & UV-B Video

Why it’s often overlooked

- Measurements are difficult to take
- Debate over current methods/techniques
- Susceptibility differences:
  - Species
  - Regions
- Traditionally has been minor issue
References