

Can Tadpoles Tolerate Colder Temperatures and Higher Salinity?



Hyla cinerea



Hyla chrysoscelis



Hyla femoralis



Hyla squirella

These are the species of frogs being tested in this experiment

Introduction:

In North Carolina, where the coastal sea level is rising, ecosystems of tree frog species are being affected. But how are they being affected? One of the things that struck interest in the effect salinity changes in environments have on tree frogs is seeing some green tree frogs jumping in the water that was 13 ppt (parts per thousand) while the ocean is 35 ppt. It is hypothesized that adaptation to different stressors (such as freezing tolerance) may have led to the ability of some species to tolerate saltwater. The question we are trying to answer in this experiment is:

How do multiple stressors (cold temperatures, salinity) affect survival in four different species of tadpole?

Objectives:

Amphibians from around the world fight against the ongoing changes in sea level by adapting to their surroundings. In this experiment, we test frogs under several different salinity and temperature ranges. The objectives of this experiment include:

- 1) Observe the effects of colder temperatures and higher salinities on tadpole SURVIVAL by quantifying daily mortality.
- 2) Have fun working with tadpoles and being a part of science.

Methods:

Each of the four species of frogs were subject to the 4 different environmental conditions. Each species had a control group which was treated filtered tap water at room temperature (~25 C). We treated species groups to either a control treatment (room temperature, freshwater), cold temperatures, or elevated salinity (two, four, or six parts per thousand) in a fully factorial design. We housed tadpoles individually in small plastic cups. Every day, the frogs were given fresh water per their assigned conditions and fish food for nourishment. The mortality rate was observed daily so time could be a variable used in data analysis.

Results:

After the few short weeks of collecting data, it was concluded that it didn't matter whether the water was salty or not, it only mattered particularly what the temperature was. **We show that cold temperatures had a much larger effect on tadpole mortality than salinity.**

Conclusions:

We were testing to see if changes in salinity and temperature affected development in tadpoles. We found that salinity levels do not affect tadpole survival as much as temperature does.

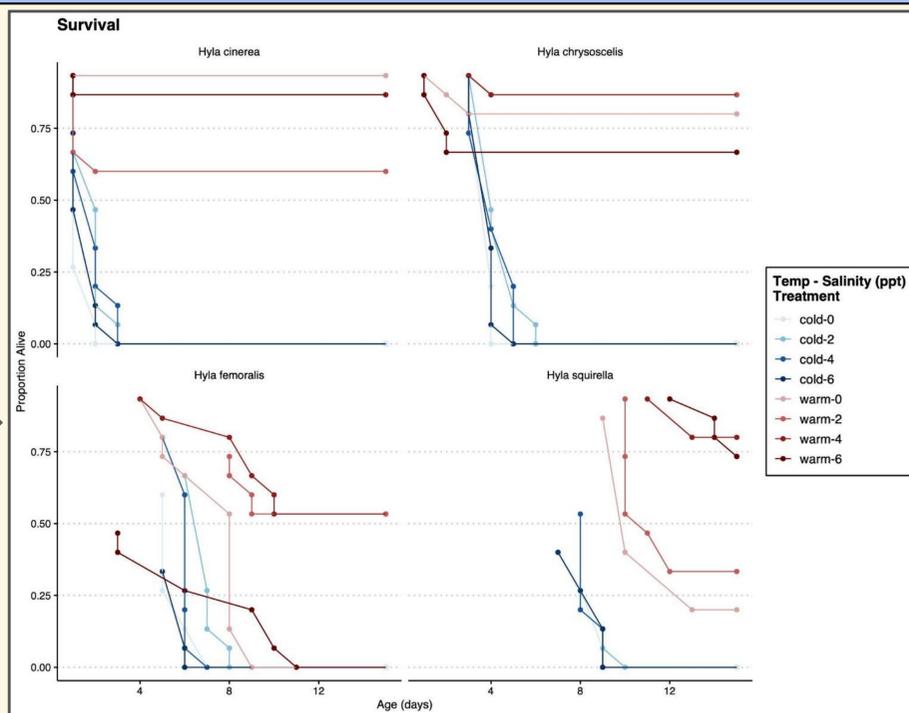


Figure legend explanations:

Cold #
OR
Salinity ppt
Warm #

means

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The amount of time that passed (x-axis (days)) to the proportion alive for the 4 species of tadpoles (y-axis)

Research Advisors:

Molly Womack, Molly Albecker
Utah State University

College of Science
UtahStateUniversity.

Austin John
Department of Biology
austin.john@usu.edu

