The influence of water quality on the embryonic survivorship of the Oregon Spotted Frog (Rana pretiosa) in British Columbia, Canada

I. General Information

Citation:

Summary/Abstract:
In Canada, the Oregon spotted frog (Rana pretiosa) is a critically endangered species with only three known populations and an estimated breeding population of less than 400 located in isolated sites in the extreme south-west corner of British Columbia. Floating Nitex cages were used to assess embryonic survivorship in two populations of Oregon spotted frogs from 2002-2005. One population, near Aldergrove, BC experienced declines in population size while the other population, at Maria Slough, increased during the period 1997-2001. During embryo development, we measured trace metals, nutrients and physical parameters in the water at each site. These were used to test the hypothesis that water quality parameters were correlated with embryonic survivorship. During the study period in the declining population at Aldergrove R. pretiosa bred at two distinct sub sites (A and B) located 500 m apart within the wetland. Mean embryonic survivorship varied from 9% to 36% at sub site A and from 78% to 88% at sub site B whereas in the population in Maria Slough, the mean embryonic survivorship varied from 77% to 84%. Sulphate was the only water chemistry variable that differed significantly between the two study sites and was the highest at Maria Slough. A weak significant positive correlation was found between chloride and embryonic survivorship and conductivity and embryonic survivorship. A multiple regression model found conductivity was the only significant variable. We concluded that natural water chemistry conditions of low chloride and consequently low conductivity may be contributing to low embryonic survivorship in the population of R. pretiosa at MD Aldergrove, BC.

Keywords:
Oregon spotted frog, Rana pretiosa, embryonic survivorship, water quality

Primary Author:
René McKibbin

Primary Author's Affiliation:
Environment Canada, Delta, BC

Other Authors:
William T Dushenko, Graham vanAggelen, Christine A Bishop

Year Started:
2002

Year Completed / Publication Date:
2008

Project Format:
Document

Project Type:
Research

II. Species Relevant to Project
III. Location and Habitat

**Project Location:**
Aldergrove area and Maria Slough

**Forest District:**
Chilliwack

**Regional District:**
Metro Vancouver, Fraser Valley

**South Coast Municipalities:**
Kent, Township of Langley

**Watershed:**
Lower Fraser, Harrison

IV. Additional Information

**Contact:**
René McKibben tel.: +1 604 940 4671; fax: +1 604 946 7022.

**My websites / Project Websites:**

**Other Information:**
Article requires payment to access.

**Source URL:** http://www.sccp.ca/sarnet-records/influence-water-quality-embryonic-survivorship-oregon-spotted-frog-rana-pretiosa

**Links**