

INTRODUCTION

Past studies have demonstrated that there is a relationship between one's risk perception, risk tolerance, and thier willingness to mitigate for or adapt to environmental perterbances. In terms of hazard mitigation, when people experience high risk perception, their risk tolerance is typically lowered causing them to become more likely to act in a way that facilitates mitigation policies or programs that help minimize losses.



This water lily was in full bloom on Fernan Lake near Coeur d'Alene, Idaho as cooler temperatures arrived on Sept. 16, 2013 (photo credit: Kathy Plonka).

In order to better understand the communitiy's perception of risk and exposure to this natural hazard a survey was conducted and focus groups were questioned. The results were categorized and analyzed individually (map images at center) and then combined. This knowledge can help researchers future strategies. determine



STUDY AREA AND GOALS



Blue-green algae on Fernan Lake (photo credit: MILES)

of Environmental Quality. These toxins are becoming an increasing threat to the community's access to the lake. Just last year, in 2014, residents saw over ninety (90) days of health advisories with levels of toxins nearly triple (3x) those of the World Health baseline Organization's standards. There is no anecdote to these toxins they are fast acting and fatal to animals and children.

The goal of this research examines the effect of risk perception on vulnerability. This research uses a case study to examine the impact of perception of risk associated with blue-green algal blooms on overall social ecological systems (SES) health in Fernan Lake. The study site is situated in the forested mountains of northern Idaho. The region offers attractive amenities for recreational opportunities.

> The study area had blue-green algae species of Microsystis, Anabaena and Aphanizomenon found in water samples by the Department



The Role of Perception in Natural Hazard **Risk Assessment and Adaptation** Author: Alycia Bean <abean@uidaho.edu>

RESULTS

In order to determine the effect of risk perception on overall vulnerability, the survey results were categorized and modeled in the Spatially Explicit Resilience-Vulnerability (SERV) model. These results can be eaily visualized to assess the variance between risk perception and other perceptions land-owners held in relation to the study site.



Association to Community

Knowledge of Impacts



Fernan Lake Sensitvity (With Risk Perception Low - Moderate Moderate - Hig High

Overall Sensitivity Model with Risk Perception Indicators Included

OBJECTIVES AND OBSERVATIONS

Utilizing the Spatially Explicit Resilience - Vulnerability (SERV) model, we sought to identify social drivers that may affect critical ecosystem services at our study site. As Human and Environmental Geographers our objective was to recognize the impacts of natural hazards and climate change as they pertain to both the physical and social vulnerabilities within our study area. The physical vulnerabilities were seen through the increase of green-algal blooms while the social vulnerabilities are often a result of social stratification and social inequalities. By collaborating with other researchers in the MILES project, we were able to identify site- specific SES parameters and vulnerabilities in SES under urban growth scenarios at Fernan Lake. By using the SERV model we were able to conduct vulnerability analyses and demonstrate where vulnerability was the highest within the study area in order to target mitigation.

Perception of Lake Health

Perception of Impacts



Once surveys and focus groups were conducted and coupled with biophysical social and the results were used data, to determine risk perception.

This is a measurement of how residents felt algal blooms might impact their future growth and development or social-ecological systems' resource availability.

Focus groups validated the survey results and were then used as indicator inputs in the Spatially Explicit Resilience-Vulnerability (SERV) model. The SERV model measured the impact of the social factors on vulnerability using place, space and scale specific biophysical indicators for Fernan Lake, ID.

Research results demonstrate that residents are concerned about the impacts of blue-green algal blooms, but the level of interest in acting on those concerns varies across the study area. However, the size of the study area made the results of the survey have no effect on the SERV model output when they were added to the model as indicators. Future work would involve expanding the study areas and incorporating additional visualization techniques such as these below to communicate risk.



City engine is a potential tool for expressing severity of risk and enhancing risk perception to increase mitigation and adaptation efforts. Above is a virtualization of a flooded Fernan and below, fire severity. Red houses are potential new development.



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METHODS



CONCLUSIONS AND FUTURE WORK

ACKNOWLEDGMENTS & REFERENCES

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