

TRU Environmental Science Seminar Series

Thursday, February 4 – 4-5:00 pm

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TITLE

The toxic truth of Vancouver Island's rough-skinned newts: chemical ecology, genetics and conservation of *Taricha granulosa*

SPEAKER

Dr. Haley Glass, Sustainability Analyst at Gibson Energy

ABSTRACT

Interactions between predator and prey have played a crucial role in adaptive evolutionary processes; however, phenotypic and genetic variation may also be driven by many other spatially variable biotic and abiotic factors. Rough-skinned newts, *Taricha granulosa*, poses a neurotoxin known as tetrodotoxin (TTX), which acts as an antipredator defense and was originally presumed to be a result of reciprocal coevolutionary interactions with resistant garter snakes across a geographic mosaic. My research investigated several aspects of the chemical ecology and genetics of rough-skinned newts and consider how these factors play out on Vancouver Island, a region left out in many previous studies that is also impacted by recent non-native species introductions. By characterizing toxicity both within and among 23 populations of newts on Vancouver Island that are genetically distinct from their mainland counterparts, I found significant variation in TTX and evidence for a previously unidentified hotspot, indicating selection pressures besides reciprocal coevolution may contribute to the observed patterns. Amphibians are also facing worldwide population declines due to factors such as negative impacts by non-native species, and Vancouver Island has experienced a recent introduction of signal crayfish and American bullfrogs. I reviewed the potential impacts of these species on rough-skinned newts and found a negative correlation between their presence and newt relative abundance, but no effect on toxicity. Collectively, this work improves our understanding of the spatial variation and genetics of chemical defense in rough-skinned newts while integrating these findings with conservation implications for Vancouver Island populations.

ESSS Winter 2021 Schedule – <https://www.tru.ca/science/news/mscseminar.html>