University of Victoria | Graduate Studies

Notice of the Final Oral Examination
for the Degree of Master of Science

of

NOVA HANSON

BSc (University of Victoria, 2016)

"Developmental Modularity in the Adult Feeding Structures of the Predatory Gastropod, *Amphissa columbiana* (Neogastropoda; Columbellidae)"

Department of Biology

Friday, August 3, 2018
9:00 A.M.
Clearihue Building
Room B017

Supervisory Committee:
Dr. Louise Page, Department of Biology, University of Victoria (Supervisor)
Dr. Rana El-Sabaawi, Department of Biology, UVic (Member)
Dr. Geraldine Allen, Department of Biology, UVic (Member)

External Examiner:
Dr. Glenys Gibson, Department of Biology, Acadia University

Chair of Oral Examination:
Prof. Maureen Bradley, Department of Writting, UVic

Dr. David Capson, Dean, Faculty of Graduate Studies

Abstract

Developmental modularity may facilitate morphological evolution by allowing phenotypic change of a developing body component without negatively impacting other components. I examined foregut development in Amphissa columbiana, a predatory neogastropod with a highly derived foregut and in Crepidula fornicata, a phytoplanktonfeeder with a less derived foregut, for evidence of developmental modules. Histological sections revealed that the post-metamorphic buccal cavity and radula of both species form as a ventral outpocketing (ventral module) from the larval esophagus (dorsal module). However, in Amphissa columbiana the ventral outpocketing is semi-isolated from the larval esophagus and also produces an “anterior esophagus” that is not developmentally homologous to the “anterior esophagus” of herbivorous caenogastropods. Semi-isolation of the ventral and dorsal modules of the developing neogastropod foregut allows precocious development of the post-metamorphic foregut during the larval stage without compromising larval feeding. Therefore, development of diverse variants of the post-metamorphic foregut are freed from larval constraints.