

June 8, 2023

To the members of the CCUBC Undergraduate Paper Award selection committee:

It is my pleasure to nominate Hannah Adams for the Canadian Council of University Biology Chairs Undergraduate Paper Award. Hannah completed a Seniors Honours Thesis in my lab from Fall 2020 – Winter 2021. Put simply, Hannah was one of the most impressive undergraduate students I've had the opportunity to work with. I was aware of Hannah's impressive academic record (cumulative GPA > 90%, Dean's Honours list every semester, multiple awards and scholarships), but these numbers did not reveal her greatest academic strengths. Hannah demonstrated a remarkable ability to synthesize material and concepts from her courses and research experience, and was not at all intimidated to tackle on new theoretical, fieldwork, and analytical techniques in her research. It was very rewarding to discuss her research project and see how Hannah brought aspects and ideas from throughout her education and integrated them in pursuit of the research aims of her project.

Hannah's thesis project used acoustic monitoring to look at migratory bat stopover in an urban ecology context. Our focal species roosts in trees, and with the extent of forest clearing in southern Ontario there are interesting questions about how migrating bats navigate the relatively treeless landscape. However, urban areas often have forested parks which may serve as important stopover sites, but it isn't clear to what extent migratory bats make use of these urban forests, and what characteristics may be important. Hannah framed this study in an island biogeography context, considering the size, shape, and isolation of these urban forest 'islands'. The first phase of the project was site selection and Hannah was very resourceful, identifying possible study sites and contacting landowners, despite the challenges of securing permissions during the pandemic. The second phase was deploying and maintaining the bat detectors and Hannah seamlessly learned to operate the devices and took over maintenance of each of the sites. When it came to data compilation and analysis, Hannah was again very resourceful and independent, integrating her prior experience with software such as Python and QGIS with new software including FragStats and R.

The results of the study were consistent with the predictions of island biogeography theory. There was greater bat activity at larger forest patches, and although not reaching the threshold of statistical significance, the trends for patch shape and isolation were both in the predicted direction. Having successfully completed the research project, Hannah



and I continued working together to prepare the work for publication. I am happy to report that her research is now published in the Canadian Journal of Zoology.

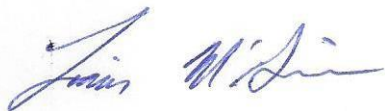
Adams H and LP McGuire. 2022. Island biogeography theory and the urban landscape: stopover site selection by the silver-haired bat (*Lasionycteris noctivagans*). Canadian Journal of Zoology 100: 243 – 250.

Hannah's paper takes an innovative approach by combining migration biology, urban ecology, and island biogeography theory. Her work is also very timely. In May 2023, COSEWIC announced a recommendation that three species of migratory bats be listed as endangered in Canada, including the silver-haired bat which was the focus of Hannah's research. Understanding habitat requirements and landscape-scale movement patterns of a long-distance migratory species will be an important component of conservation planning, urban development, and endangered species recovery plans.

To summarize, Hannah was an exceptional undergraduate researcher who went well above and beyond my expectations. Her research took an innovative approach, combining ideas from multiple areas of biology to address her study question. The research will make an important contribution to the endangered species recovery planning, following the recent COSEWIC recommendation that silver-haired bats be designated as endangered species. It was clear to me early on that Hannah has great potential as a researcher, and I am very happy that she is now pursuing a masters degree at Memorial University. It is apparent that Hannah very much enjoys the research experience and I am happy to provide my strong recommendation that she be recognized for the quality of her efforts. The CCUBC Undergraduate Paper Award would be a very fitting recognition.

If you have any further questions or require any additional information about Hannah's work or my recommendation, please do not hesitate to contact me at the email address below.

Sincerely,



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