ENGLISH—2018 Early Career Researcher Award - Mélanie Guigueno

Dr. Mélanie Guigueno, the 2018 winner of the Society of Canadian Ornithologists' Early Career Researcher Award, was nominated by Dr. David Sherry, one of her supervisors at the Advanced Facility for Avian Research at the University of Western Ontario, where she completed her Ph.D. in Biology in 2015. Following her Ph.D., she held MITACS and FQRNT postdoctoral fellowships in the Department of Natural Resource Sciences at McGill on the effects of flame retardants on the brain and behaviour of birds, supervised by Drs. Jessica Head and Kim Fernie. She is currently studying the effects of stress on social learning and brain activity in Trinidadian guppies under the supervision of Dr. Simon Reader in Biology at McGill. In January 2019, Mélanie will start an assistant professor position in the Department of Biology at McGill, where she hopes to inspire students in the field, lab, and classroom, while continuing to conduct cognitive ecology research on birds.

Dr. Guigueno's Ph.D. research focused on cognitive ecology (the study of adaptive specializations in cognition and the brain). Mélanie's work concerned sex differences in spatial memory among brown-headed cowbirds because in many brood parasites, females show more complex space use than males, in contrast to other systems in which sex difference are in the opposite direction. While female cowbirds must remember the location of cryptic host nests from day to day, in order to lay each egg immediately after dawn, male cowbirds are under no such demands. Mélanie showed, in a test that resembled search for host nests, that females remembered spatial locations more accurately than males. However, in a test of spatial ability using touch screens, which did not resemble host nest searching, males performed better than females. These results suggested that spatial memory in cowbirds consists of multiple abilities, probably specialized for different spatial contexts.

Mélanie also examined sex differences in the brain of brown-headed cowbirds. She conducted ELISA assays to measure testosterone in the blood to confirm breeding condition and used immune-histochemical techniques to examine seasonal neurogenesis in the cowbird hippocampus, a brain region important for spatial memory. Her results showed that, overall, cowbirds had higher levels of adult hippocampal neurogenesis than a closely-related, non-parasitic Icterid, the red-winged blackbird. Moreover, she found that neurogenesis in the hippocampus was higher in female cowbirds in fall than in spring, possibly serving the function of disrupting memory for the locations of last year's host nests, cleaning out the memory prior to storage of the next year's locations. She is an exceptional researcher, equally at home in the field and the lab and expert at handling animals in a safe and respectful manner.

As a Ph.D. student, Dr. Guigueno's trained many undergraduates in research methods and animal handling, proving herself to be a very successful mentor, imparting both enthusiasm for research and high standards. Many of these students went on to graduate, veterinary or medical school. She also participated enthusiastically in outreach work in biology and conservation. Her wide interests in both fundamental and applied science will lead to continued significant contributions to ornithology in Canada and new discoveries about the behaviour and brain of birds. She has not only published widely in the peer-reviewed literature, including the top journals in her field, but has also described her findings in popular science outlets including radio and newspaper interviews. Co-workers have described her as having "an obvious, infectious enthusiasm for biology in general and for ornithology in particular."

Mélanie's achievements have been recognized with scholarships and research funding from NSERC, The Animal Behavior Society and the American Museum of Natural History, as well as a variety of university awards and scholarships. She currently holds an NSERC postdoctoral fellowship, with supplements from L'Oréal-UNESCO and The Royal Society of Canada.

This year's nominations for the Early Career Researcher Award included two other very talented and outstanding young researchers. However, the search committee, consisting of myself and Professors David Logue (University of Lethbridge) and Dorothy Hill (Mt. Royal University) considered, independently, that Dr. Guigueno was the best-qualified candidate. We are very fortunate, in Canada, to have so many highly promising young researchers in ornithology.

Anthony J Gaston, Research Scientist Emeritus, National Wildlife Research Centre, Environment and Climate Change Canada, For the Society of Canadian Ornithologists