Josh D. Dunn

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Research Interests

My research has focused on the behavioural ecology of cooperatively breeding systems. Specifically, I study the influence of helper resource allocation on the emergence of helpful behaviour. Recently, I have been interested in applying high performance scientific computing to these and other problems.

Education

The University of Western Ontario — Started in 2014
Masters of Science — Expected Completion in 2016
Applied Mathematics (Thesis Based)

The University of Western Ontario — 2010 - 2014
Bachelor of Science
Honors Specialization in Applied Mathematics (with Distinction)
Thesis: "Sex-Ratio Evolution and the Emergence of Helpful Behaviour"

Computer Skills

C/C++ (experience with CUDA, BLAS, OpenMPI, and OpenCL), Maple, LaTeX, SHARCNET

Academic Awards / Scholarships

AMMCS-CAIMS Special Session Student Presentation Award (2015)

NSERC Canada Graduate Scholarship – Masters (CGS-M) (2015)

Queen Elizabeth II Graduate Scholarship in Science and Technology (QEII-GSST) (2015) Declined

Queen Elizabeth II Graduate Scholarship in Science and Technology (QEII-GSST) (2014)

Dillon Gold Medal (Summer 2014)

Dean's Honor List (2011-2014)

Natural Sciences and Engineering Research Council of Canada Undergraduate Student Research Award (Summer 2013 and 2014)

Albert O. Jeffery Scholarship in Applied Mathematics (Fall 2013)

Innovative Program Award (Winter 2011)

Randal Cole Scholarship in Mathematics (Fall 2011)

Research Contributions

Reviewer for The Journal of Theoretical Biology (2015)

Dunn, J. D., Vujicic, T., & Wild, G. (2015). Sex allocation and the emergence of helping in cooperatively breeding species. *Theoretical Population Biology*, 104:1-9.

"The Emergence of Cooperative Breeding Systems with Resource Allocation" presented at the AMMCS-CAIMS conference hosted by Wilfred Laurier University, Waterloo, Ontario, Canada, June 7-12, 2015.

"Sex Allocation and the Emergence of Cooperative Breeding" presented at the Canadian Society for Ecology and Evolution (CSEE) conference hosted by The University of Saskatchewan, Saskatoon, Saskatchewan, Canada, May 21-25, 2015.

"Inclusive Fitness of Sex Allocation: The Pursuit of Understanding Cooperation" presented at the Canadian Undergraduate Mathematics Conference (CUMC) hosted by Carleton University, Ottawa, Ontario, Canada, July 2-5, 2014.

Research Experience

Fellowship - Undergrad — Summer 2014
Supervisor: Dr. Geoff Wild
The University of Western Ontario
Used population dynamics and invasion analysis to investigate the effects of resource investment on the emergence of cooperative breeding systems.

Fellowship - Undergrad — Summer 2013
Supervisor: Dr. Geoff Wild
The University of Western Ontario
Worked on a simulation to determine the effects of various vaccination strategies for an epidemic model on a two dimensional lattice.

Teaching Experience

Teaching Assistant — Winter 2015 Term
Supervisor: Dr. Lindi Wahl
The University of Western Ontario
Duties included running help sessions (one-on-one help) and tutorials for students enrolled in Calculus and Probability with Biological Applications (Applied Mathematics 1201B) in addition to proctoring during

exam periods.

Help Session Instructor — Fall 2012 - Spring 2013
Supervisor: Dr. Arash Pourkia
Huron University College
Aided students in understanding course material at help sessions for a variety of mathematics based courses. These courses included methods of Finite Mathematics (1228B), Methods of Calculus (1225B), Introductory Calculus (0110A), and Methods of Matrix Algebra (1229A).

Volunteer Activities

Upper Year Student Leader — Fall 2011 - Spring 2012
Alumni House Soph Team
The University of Western Ontario
Lived in student residence and provided advice to first years to help ease their transition from high school to university. This also included planning events to promote a social atmosphere within the residence. Active student leader in Western's Orientation Week event.

References

Available upon request.