

Jean-François Doherty

Postdoctoral Research Fellow

Department of Zoology, University of British Columbia

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PROFESSIONAL APPOINTMENTS

2022-current **Postdoctoral Research Fellow**, Department of Zoology, University of British Columbia
Advisors: Benjamin J. Matthews and Leonard J. Foster

EDUCATION

2018-2021 **Ph.D.**, Zoology, University of Otago
Elucidating the hidden infection dynamics between hairworms and their aquatic and terrestrial hosts
Supervisor: Robert Poulin
Featured on [Radio New Zealand](#)

2014-2017 **M.Sc.**, Biology, Université Laval
Phénologie et modèles prévisionnels d'éclosion printanière pour trois arthropodes ravageurs en plantation commerciale d'arbres de Noël dans un contexte de changements climatiques
Supervisor: Conrad Cloutier

2011-2014 **B.Sc. International Profile**, Biology, Université Laval and University of Oslo

PUBLICATIONS

[Google Scholar Profile](#)

Manuscripts in preparation

2. Ni, S. and **Doherty, J.-F.** The island rule: conflicting patterns in insects (Orthoptera). In preparation for *Biology Letters*.
1. **Doherty, J.-F.**, Bennett, J., Poulin, R., and Park, E. Hairworms around the world: phylogenetics of the phylum Nematomorpha. In preparation for *Molecular Phylogenetics and Evolution*.

Submitted manuscripts

1. **Doherty, J.-F.**, Bhattarai, U.R., Ferreira, S., Poulin, R., Gemmell, N.J., and Dowle, E.J. The truth is in the poo: non-invasive method to detect endoparasitic infection. Under review in *Molecular Ecology Resources*.

Peer-reviewed publications

27. Hasik, A.Z., de Angeli Dutra, D., **Doherty, J.-F.**, Duffy, M.A., Poulin, R., and Siepielski, A.M. 2022. Resetting our expectations for parasites and their effects on species interactions: a meta-analysis. *Ecology Letters*, DOI: 10.1111/ele.14139.
26. **Doherty, J.-F.**, Filion, A., and Poulin, R. 2022. Infection patterns and new definitive host records for New Zealand gordiid hairworms (phylum Nematomorpha). *Parasitology International* 90, 102598.
25. **Doherty, J.-F.** and Matthews, B.J. 2022. Host manipulation, gene editing, and non-traditional model organisms: a new frontier for behavioral research? *Frontiers in Insect Science* 2, 938644.
24. Ni, S. and **Doherty, J.-F.** 2022. Species-specific tidal locomotion linked to a parasitic infection in sympatric sea snails. *Marine Biology* 169(7), 88.

23. Filion, A., **Doherty, J.-F.**, Poulin, R., and Godfrey, S.S. 2022. Building a comprehensive phylogenetic framework in disease ecology. *Trends in Parasitology* 38(6), 424-427.
22. **Doherty, J.-F.** and Poulin, R. 2022. Come with me if you want to live: sympatric parasites follow different transmission routes through aquatic host communities. *International Journal for Parasitology* 52(5), 293-303.
21. **Doherty, J.-F.**, Milotic, M., Filion, A., and Eriksson, A. 2022. Host specificity and the reproductive strategies of parasites. *Parasitology* 149(4), 534-541.
20. **Doherty, J.-F.** and Poulin, R. 2022. The return to land: association between hairworm infection and aquatic insect development. *Parasitology Research* 121(2), 667-673.
19. **Doherty, J.-F.**, Chai, X., Cope, L.E., de Angeli Dutra, D., Milotic, M., Ni, S., Park, E., and Filion, A. 2021. The rise of big data in disease ecology. *Trends in Parasitology* 37(12), 1034-1037.
18. Ni, S., **Doherty, J.-F.**, and Poulin, R. 2021. Convergent drivers of body size evolution in distinct parasite taxa with convergent life cycles. *Global Ecology and Biogeography* 30(12), 2382-2392.
17. **Doherty, J.-F.**, Filion, A., Bennett, J., Bhattarai, U.R., Chai, X., de Angeli Dutra, D., Donlon, E., Jorge, F., Milotic, M., Park, E., Sabadel, A.J.M., Thomas, L.J., and Poulin, R. 2021. The people vs science: can passively crowdsourced internet data shed light on host-parasite interactions? *Parasitology* 148(11), 1313-1319.
16. Bhattarai, U.R., **Doherty, J.-F.**, Dowle, E., and Gemmell, N.J. 2021. The adaptiveness of host behavioural manipulation assessed using Tinbergen's four questions. *Trends in Parasitology* 37(7), 597-609.
15. Poulin, R., Bennett, J., Filion, A., Bhattarai, U.R., Chai, X., de Angeli Dutra, D., Donlon, E., **Doherty, J.-F.**, Jorge, F., Milotic, M., Park, E., Sabadel, A., and Thomas, L.J. 2021. iParasitology: mining the internet to test parasitological hypotheses. *Trends in Parasitology* 37(4), 267-272.
14. **Doherty, J.-F.** 2020. When fiction becomes fact: exaggerating host manipulation by parasites. *Proceedings of the Royal Society B: Biological Sciences* 287(1936), 20201081.
Featured in [Nature Index](#)
13. **Doherty, J.-F.** and Ruehle, B. 2020. An integrated landscape of fear and disgust: the evolution of avoidance behaviors amidst a myriad of natural enemies. *Frontiers in Ecology and Evolution* 8, 564343.
12. Milotic, M., Lymbery, A., Thompson, A., **Doherty, J.-F.**, and Godfrey, S. 2020. Parasites are endangered by the conservation of their hosts: meta-analyses of the effect of host captivity on the odds of parasite infection. *Biological Conservation* 248, 108702.
11. Poulin, R., Bennett, J., de Angeli Dutra, D., **Doherty, J.-F.**, Filion, A., Park, E., and Ruehle, B. 2020. Evolutionary signature of ancient parasite pressures, or the ghost of parasitism past. *Frontiers in Ecology and Evolution* 8, 195.
10. Eriksson, A., **Doherty, J.-F.**, Fischer, E., Gracioli, G., and Poulin, R. 2020. Hosts and environment overshadow spatial distance as drivers of bat fly species composition in the Neotropics. *Journal of Biogeography* 47(3), 736-747.
9. Herbison, R., Evans, S., **Doherty, J.-F.**, Algie, M., Kleffmann, T., and Poulin, R. 2019. A molecular war: convergent and ontogenetic evidence for adaptive host manipulation in related parasites infecting divergent hosts. *Proceedings of the Royal Society B: Biological Sciences* 286(1915), 20191827.
Featured in [The New York Times](#)
8. **Doherty, J.-F.**, Chai, X., and Poulin, R. 2019. Varying levels of melanotic encapsulation of gordiid hairworm cysts (Nematomorpha) by aquatic insect larvae: seasonal and host effects. *Journal of Invertebrate Pathology* 168, 107258.
7. Herbison, R.E.H., Evans, S., **Doherty, J.-F.**, and Poulin, R. 2019. Let's go swimming: mermithid-infected earwigs exhibit positive hydrotaxis. *Parasitology* 146(13), 1631-1635.
6. Selbach, C., Jorge, F., Dowle, E., Bennett, J., Chai, X., **Doherty, J.-F.**, Eriksson, A., Filion, A., Hay, E., Herbison, R., Lindner, J., Park, E., Presswell, B., Ruehle, B., Sobrinho, P.M., Wainwright, E., and Poulin, R. 2019. Parasitological research in the molecular age. *Parasitology* 146(11), 1361-1370.

5. Guay, J.-F., Bernier-Desmarais, A., **Doherty, J.-F.**, and Cloutier, C. 2018. Bionomics of the pine needle scale (Hemiptera: Diaspididae), an emerging pest in Christmas tree (Pinaceae) plantations in southern Québec, Canada. *The Canadian Entomologist* 150(5), 632-636.
4. **Doherty, J.-F.**, Guay, J.-F., and Cloutier, C. 2018. Embryonic stage of obligatory diapause and effects of abiotic conditions on egg hatching in the balsam twig aphid, *Mindarus abietinus*. *Entomologia Experimentalis et Applicata* 166(8), 628-637.
3. **Doherty, J.-F.**, Guay, J.-F., and Cloutier, C. 2018. Novel temperature-dependent development rate models for postdiapause egg eclosion of three important arthropod pests found in commercial Christmas tree plantations of southern Québec, Canada. *Environmental Entomology* 47(3), 715-724.
2. **Doherty, J.-F.**, Guay, J.-F., and Cloutier, C. 2018. Early springtime water absorption by overwintering eggs of *Mindarus abietinus* (Hemiptera: Aphididae): possible implications for cold hardiness and diapause termination. *The Canadian Entomologist* 150(2), 174-179.
1. **Doherty, J.-F.**, Guay, J.-F., and Cloutier, C. 2017. Temperature-manipulated dynamics and phenology of *Mindarus abietinus* (Hemiptera: Aphididae) in commercial Christmas tree plantations in Québec, Canada. *The Canadian Entomologist* 149(6), 801-812.

Research reports

1. Flores-Mejia, S., Guay, J.-F., **Doherty, J.-F.**, and Cloutier, C. 2015. Dépistage et contrôle naturel des ravageurs émergents en framboise et fraise à l'île d'Orléans. NSERC Engage Grant #469122-14, Canada.

RESEARCH AND TRAVEL GRANTS

2020-2021	Hutton Fund Royal Society Te Apārangi Principal applicant: <i>Quantifying the seasonal distribution of hairworm cysts in freshwater macroinvertebrates of New Zealand</i>	1,000 NZD
2019	V.H. Jolly Travel Grant New Zealand Freshwater Sciences Society	500 NZD
2019	Zoology Postgraduate Conference Grant University of Otago	500 NZD
2018	Zoology Postgraduate Conference Grant University of Otago	500 NZD
2018	Student Travel Grant New Zealand Society for Parasitology	500 NZD
2016-2021	Marsden Fund #16-UOO-152 Royal Society Te Apārangi Co-investigator: <i>Parasitic Puppeteers - How do They Pull the Strings?</i>	830,000 NZD
2013-2016	Programme Innov'Action agroalimentaire #IA113043 Ministère de l'agriculture, des pêcheries et de l'alimentation du Québec Co-investigator: <i>Dépistage et aménagement des plantations d'arbres de Noël visant à optimiser le contrôle naturel des ravageurs</i>	109,320 CAN

AWARDS

2021	Doctoral Postgraduate Publishing Bursary University of Otago	6,750 NZD
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2019	People's Choice Award, Three Minute Thesis Grand Final University of Otago	250 NZD
2019	Best Doctoral Presentation, Three Minute Thesis Sciences Heat University of Otago	300 NZD
2019-2021	Postgraduate Scholarship - Doctoral Natural Sciences and Engineering Research Council of Canada	52,500 CAN
2018-2021	Doctoral Scholarship University of Otago	83,833 NZD
2013	International Office Scholarship Université Laval	3,250 CAN

PRESENTATIONS

Conference presentations

10. **Doherty, J.-F.**, Bhattarai, U.R., Poulin, R., Gemmell, N.J., and Dowle, E.J. 2022. The truth is in the poo: non-invasive method to detect endoparasitic infection. Oral presentation. 2022 ESA, ESC, and ESBC Joint Annual Meeting, Vancouver, Canada.
9. **Doherty, J.-F.**, Dowle, E.J., and Poulin, R. 2020. To "drive" a land-loving insect into deadly waters: a hairworm story. Oral presentation. 69th Entomological Society of New Zealand Conference, Dunedin, New Zealand. **conference cancelled due to COVID-19*
8. **Doherty, J.-F.**, Chai, X., and Poulin, R. 2019. Hidden interactions between hairworms and their intermediate freshwater hosts. Oral presentation. Australian Freshwater Sciences Society and New Zealand Freshwater Sciences Society Joint Conference, Geelong, Australia.
7. **Doherty, J.-F.**, Filion, A., Milotic, M., and Eriksson, A. 2019. The impact of host specificity on the reproductive strategies of parasitic copepods infecting fish or coral. Oral presentation. 30th Zoology Postgraduate Symposium, Orokonui Ecosanctuary, New Zealand.
6. **Doherty, J.-F.**, Filion, A., Milotic, M., and Eriksson, A. 2019. Contrasting effects of host specificity and host mobility on the reproductive strategies of parasites. Oral presentation. 47th New Zealand Society for Parasitology Conference and Annual Meeting, Dunedin, New Zealand.
5. **Doherty, J.-F.**, Poulin, R., and Dowle, E.J. 2018. Non-invasive detection of hairworm infections in insects using eDNA. Oral presentation. 21st New Zealand Molecular Ecology Conference, Pohangina, New Zealand.
4. **Doherty, J.-F.** and Poulin, R. 2018. Natural hairworm infections in paratenic and definitive insect hosts. Oral presentation. 29th Zoology Postgraduate Symposium, Orokonui Ecosanctuary, New Zealand.
3. **Doherty, J.-F.** and Poulin, R. 2018. Host-parasite interactions of insects and hairworms. Oral Presentation. 46th New Zealand Society for Parasitology Conference and Annual Meeting, Palmerston North, New Zealand.
2. **Doherty, J.-F.**, Guay, J.-F., and Cloutier, C. 2016. Phénologie du puceron des pousses du sapin soumise à un environnement expérimental semi-protégé dans une plantation commerciale de sapins baumier. Oral presentation. 143rd Société d'entomologie du Québec Annual Reunion, Nicolet, Canada.
1. **Doherty, J.-F.**, Guay, J.-F., and Cloutier, C. 2014. La phénologie du puceron des pousses du sapin et du tétranyque de l'épinette soumise aux changements climatiques dans les plantations commerciales de sapins de Noël. Poster. 141st Société d'entomologie du Québec Annual Reunion, Wendake, Canada.

Invited talks

2. **Doherty, J.-F.**, Guay, J.-F., and Cloutier, C. 2017. Nouveaux modèles prévisionnels du développement des ravageurs en plantation d'arbres de Noël. Oral presentation. APANQ Christmas Tree Convention 2017, Orford, Canada.

1. **Doherty, J.-F.**, Guay, J.-F., and Cloutier, C. 2015. Changements climatiques et ravageurs en plantation d'arbres de Noël : impacts à prévoir sur le dépistage et les infestations (partie 1). Oral presentation and poster. APANQ Christmas Tree Convention 2015, Orford, Canada.

TEACHING EXPERIENCE

Lecturer

Fall 2017 **Entomology**, Université Laval

Teaching assistant or demonstrator*

Fall 2021 **Behavioural and Evolutionary Ecology**, University of Otago

Fall 2020 **Behavioural and Evolutionary Ecology**, University of Otago

Fall 2019 **Behavioural and Evolutionary Ecology**, University of Otago

Fall 2019 **Animal Designs for Living**, University of Otago

Spring 2018 **Animal Biology**, University of Otago

Fall 2016 **Entomology**, Université Laval

Spring 2016 **Biodiversity II**, Université Laval

Spring 2015 **Entomology**, Université Laval

Fall 2014 **Invertebrate Zoology**, Université Laval

**Equivalent to teaching assistant at University of Otago.*

STUDENTS

2022 **Mobeen Faiz**, Undergraduate Student, Biology Undergraduate Diversity in Research Program, University of British Columbia

2022 **Anne Fuentes**, Undergraduate Student, Biology Undergraduate Diversity in Research Program, University of British Columbia

2022-2023 **Bingzong Liu**, Undergraduate Student, Directed Studies (BIOL 448), University of British Columbia

2020-2021 **Steven Ni**, Undergraduate Student, Summer Research Student, University of Otago

2018-2019 **Xuhong Chai**, Undergraduate Student, Summer Research Student, University of Otago

2016-2017 **Amy Bernier-Desmarais**, Undergraduate Student, Research Assistant, Université Laval

2014-2015 **William Champagne-Cauchon**, Undergraduate Student, Research Assistant, Université Laval

2014-2015 **Simon-Charles Blouin**, Undergraduate Student, Research Assistant, Université Laval

ACADEMIC SERVICES

Journal peer reviews [number of reviews]

Animals [1]; Arthropod-Plant Interactions [1]; Biology Letters [2]; Diseases [1]; Journal of Helminthology [1]; Microorganisms [1]; Parasitology Research [1]; Pathogens [1]

RESEARCH EXPERIENCE

2016 **Research Assistant**, Université Laval

Project: Exploratory research on invasive thrips (Thysanoptera: Thripidae) of strawberry plants

SCIENTIFIC OUTREACH

- 2021 **Interviewee**, "The winding paths of science" from the series Our Changing World, *Radio New Zealand*
- 2021 **Interviewee**, "Rise of the zombie ants" written by Gemma Conroy for *Nature Index*
- 2016 **Volunteer Scientific Judge**, Hydro-Québec Science Fair Finals, Sorel-Tracy, Canada
- 2015 **Scientific Kiosk**, APANQ Field Day 2015, Courcelles, Canada

OTHER EXPERIENCE

2009-2018 **Technical Adviser**, Maheu&Maheu Inc., Québec City, Canada

SCIENTIFIC SOCIETIES

- 2022-current Member, Entomological Society of British Columbia
- 2018-2021 Member, New Zealand Society for Parasitology
- 2019-2021 Member, Entomological Society of New Zealand
- 2019-2021 Member, New Zealand Freshwater Sciences Society
- 2014-2019 Member, Société d'entomologie du Québec
- 2017 Member, Entomological Society of America

REFERENCES

Professor Robert Poulin, Department of Zoology, University of Otago
Doctoral supervisor - robert.poulin@otago.ac.nz

Dr. Eddy Dowle, Department of Anatomy, University of Otago
Research collaborator - eddy.dowle@otago.ac.nz

Professor Conrad Cloutier, Département de Biologie, Université Laval
Master's supervisor - conrad.cloutier@bio.ulaval.ca