

TRAVIS INGRAM

Department of Zoology, University of Otago
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<http://www.otago.ac.nz/ecoevotago/>

APPOINTMENTS

Senior Lecturer, Zoology, University of Otago	2019-present
Lecturer, Zoology, University of Otago	2013-present
Postdoctoral Fellow, Integrative Biology, University of Texas at Austin Advisor: Daniel I. Bolnick	2013
NSERC Postdoctoral Fellow, Organismic and Evolutionary Biology, Harvard Advisor: Jonathan B. Losos	2011-2013

EDUCATION

Doctorate of Philosophy, Zoology, University of British Columbia Thesis: Evolution of the trophic niche and food web structure Advisors: Dolph Schluter and Jonathan B. Shurin	2006-2011
Bachelor of Science with Honours, Biology, University of Victoria Thesis: Niche partitioning in a population of threespine stickleback Advisor: Thomas E. Reimchen	1999-2005

PUBLICATIONS

H-index 19 (Google Scholar), 1833 total citations, Erdős Number 3

39. **Ingram, T.**, L. Dutoit, P. Mikheev, S. Khan and M. Schallenberg. 2020. Phenotypic, ecological and genomic variation in common bully (*Gobiomorphus cotidianus*) populations along depth gradients in New Zealand's Southern Great Lakes. *in press*, Canadian Journal of Fisheries and Aquatic Sciences.
38. Mikheev, P., G.P. Closs, M.G. Jarvis, C.D. Matthaei, **T. Ingram**, A.I. Nikiforov and A.A. Semenchenko. 2020. Geomorphological features drive spatiotemporal dynamics of young-of-the-year brown trout populations in a large New Zealand river catchment. *in press*, Freshwater Biology.
37. Durante, L.M., A.J.M. Sabadel, R.D. Frew, **T. Ingram** and S.R. Wing. 2020. Effects of fixatives on stable isotopes of fish muscle tissue: implications for trophic studies on preserved specimens. *Ecological Applications* 30: e02080.
36. McCulloch, G.A., **T. Ingram** and J.M. Waters. 2020. Does elevation influence mayfly emergence timing? A case study using New Zealand's endemic ephemeropteran fauna. *Ecological Entomology* 45: 756-760.
35. Puttick M.N., **T. Ingram**, M. Clarke, E. Paradis, D. Orme, R. Freckleton and G.H. Thomas. 2020. MOTMOT: models of trait macroevolution on trees (an update). *Methods in Ecology and Evolution* 11: 464-471.

34. Saboret, G. and **T. Ingram**. 2019. Carryover effects of larval environment on individual variation in a facultatively diadromous fish. *Ecology and Evolution* 9: 10630-10643.
33. Costa-Pereira, R., B. Toscano, F. Souza, **T. Ingram** and M. Araújo. 2019. Individual niche trajectories drive fitness variation. *Functional Ecology* 33: 1734-1745.
32. McCulloch, G.A., B.J. Foster, L. Dutoit, **T. Ingram**, E. Hay, A.J. Veale, P.K. Dearden and J.M. Waters. 2019. Ecological gradients drive insect wing loss and speciation: the role of the alpine treeline. *Molecular Ecology* 28: 3141-3150.
31. Costa-Pereira, R., M.S. Araújo, F.L. Souza and **T. Ingram**. 2019. Competition and resource breadth shape niche variation and overlap in multiple trophic dimensions. *Proceedings of the Royal Society B* 286: 20190369.
30. Beer, A., **T. Ingram** and H. Randhawa. 2019. Role of ecology and phylogeny in determining tapeworm assemblages in skates (Rajiformes). *Journal of Helminthology* 93: 738-751.
29. McCulloch, G.A., B.J. Foster, **T. Ingram** and J.M. Waters. 2018. Insect wing loss is tightly linked to the treeline: evidence from a diverse stonefly assemblage. *Ecography* 42: 1-3.
28. **Ingram, T.** and Z.D. Burns. 2018. Top-down control by an aquatic invertebrate predator depends on temperature but not individual behavioural type. *Ecology and Evolution* 8: 8256-8265.
27. French, C.M., **T. Ingram** and D.I. Bolnick. 2018. Geographical variation in color of female threespine stickleback (*Gasterosteus aculeatus*). *PeerJ* 6: e4807
26. **Ingram, T.**, R. Costa-Pereira and M.S. Araújo. 2018. The dimensionality of individual niche variation. *Ecology* 99: 536-549.
25. **Ingram, T.** and S.M. Bennington. 2018. Weak but parallel divergence between kōaro (*Galaxias brevipinnis*) from adjacent lake and stream habitats. *Evolutionary Ecology Research* 19: 29-42.
24. Mahler, D.L., M.G. Weber, C.E. Wagner and **T. Ingram**. 2017. Pattern and process in the comparative study of convergent evolution. *American Naturalist* 190: S13-S28.
23. **Ingram, T.**, A. Harrison, D.L. Mahler, M.R. Castaneda, R.E. Glor, A. Herrel, Y.E. Stuart and J.B. Losos. 2016. Comparative tests of the role of dewlap size in *Anolis* lizard speciation. *Proceedings of the Royal Society B* 283: 20162199.
22. **Ingram, T.** 2015. Diversification of body shape in *Sebastes* rockfishes of the northeast Pacific. *Biological Journal of the Linnean Society* 116: 805-818.
21. **Ingram, T.**, Y. Jiang, R. Rangel and D.I. Bolnick. 2015. Widespread positive but weak assortative mating by diet within stickleback populations. *Ecology and Evolution* 5: 3352-3363.
20. Chernomor, O., B.Q. Minh, F. Forest, S. Klaere, **T. Ingram**, M. Henzinger and A. von Haeseler. 2015. Split diversity in constrained conservation prioritization using integer linear programming. *Methods in Ecology and Evolution* 6: 83-91.
19. Klaczko, J., **T. Ingram** and J.B. Losos. 2015. Genitals evolve faster than other traits in *Anolis* lizards. *Journal of Zoology* 295: 44-48.
18. **Ingram, T.**, and Y. Kai. 2014. The geography of morphological convergence in the radiations of Pacific *Sebastes* rockfishes. *American Naturalist* 184: E115-E131.
17. Mahler, D.L. and **T. Ingram**. 2014. Phylogenetic comparative methods for studying cladewide convergence. *in* Modern phylogenetic comparative methods and their application in evolutionary biology (ed: Garamszegi, L.Z.). Springer, Berlin Heidelberg.
16. Mahler, D.L., **T. Ingram**, L.J. Revell and J.B. Losos. 2013. Exceptional convergence on the macroevolutionary landscape in island lizard radiations. *Science* 341: 292-295.
*Recommended by the Faculty of 1000.

15. **Ingram, T.** and D.L. Mahler. 2013. SURFACE: detecting convergent evolution from comparative data by fitting Ornstein-Uhlenbeck models with stepwise Akaike Information Criterion. *Methods in Ecology and Evolution* 4: 416-425.
14. **Ingram, T.**, L.J. Harmon and J.B. Shurin. 2012. When should we expect early bursts of trait evolution in comparative data? Predictions from an evolutionary food web model. *Journal of Evolutionary Biology* 25: 1902-1910.
13. **Ingram, T.**, A.G. Hudson, P. Vonlanthen and O. Seehausen. 2012. Does divergence in spawning depth or diet predict progress toward speciation in parallel whitefish radiations? *Evolutionary Ecology Research* 14: 487-502.
12. Kratina, P., R.M. LeCraw, **T. Ingram** and B.R. Anholt. 2012. Stability and persistence of food webs with omnivory: is there a general pattern? *Ecosphere* 3: art50.
11. **Ingram, T.**, R. Svanbäck, N.J.B. Kraft, P. Kratina, L. Southcott and D. Schluter. 2012. Intraguild predation drives evolutionary niche shift in threespine stickleback. *Evolution* 66: 1819-1832.
*Winner: *Ecological Society of America Thomas M. Frost Award*.
10. **Ingram, T.**, W.E. Stutz and D.I. Bolnick. 2011. Does intraspecific size variation in a predator affect its diet diversity and top-down control of prey? *PLoS ONE* 6: e20782.
9. **Ingram, T.** 2011. Speciation along a depth gradient in a marine adaptive radiation. *Proceedings of the Royal Society B* 278: 613–618.
*Recommended by the Faculty of 1000.
8. **Ingram, T.** and M. Steel. 2010. Modeling the unpredictability of future biodiversity in ecological networks. *Journal of Theoretical Biology* 264: 1047–1056.
7. Bolnick, D.I., **T. Ingram**, W.E. Stutz, L.K. Snowberg, O.L. Lau and J.S. Paull. 2010. Ecological release from interspecific competition leads to decoupled changes in population and individual niche width. *Proceedings of the Royal Society B* 277: 1789–1797.
6. Magnuson-Ford, K., **T. Ingram**, D.W. Redding and A.Ø. Mooers. 2009. Rockfish (*Sebastes*) that are evolutionarily isolated are also large, morphologically distinctive and vulnerable to overfishing. *Biological Conservation* 142: 1787–1796.
5. **Ingram, T.** and J.B. Shurin. 2009. Trait-based assembly and phylogenetic structure in northeast Pacific rockfish assemblages. *Ecology* 90: 2444–2453.
4. **Ingram, T.**, L.J. Harmon and J.B. Shurin. 2009. Niche evolution, trophic structure and species turnover in model food webs. *American Naturalist* 174: 56–67.
3. Bolnick, D.I., L.K. Snowberg, W.E. Stutz, C. Patenia, **T. Ingram** and O.L. Lau. 2009. Phenotype-dependent native habitat preference facilitates divergence between parapatric lake and stream stickleback. *Evolution* 63: 2004–2016.
*Recommended by the Faculty of 1000.
2. Reimchen, T.E., **T. Ingram** and S.C. Hansen. 2008. Assessing niche differences of sex, armour and asymmetry phenotypes using stable isotope analyses in Haida Gwaii sticklebacks. *Behaviour* 145: 561–577.
1. **Ingram, T.**, B. Matthews, C. Harrod, T. Stephens, J. Grey, R. Markel and A. Mazumder. 2007. Lipid extraction has little effect on the $\delta^{15}\text{N}$ of aquatic consumers. *Limnology & Oceanography: Methods* 5: 338–343.

in review / in revision

Richardson, M.R.A. and **T. Ingram**. Intraguild predation has contrasting effects on individual specialisation in habitat and diet. *submitted*, *Journal of Animal Ecology*.

- Kerr, N.S. and **T. Ingram**. Personality does not predict individual niche variation in a freshwater fish. *in revision*, Behavioral Ecology.
- Rangel, R., **T. Ingram** and D.I. Bolnick. Rates of alloparental care by male stickleback in natural lake populations. *in review*, Behavioral Ecology.
- Stuart, R., **T. Ingram** and G.P. Closs. Recolonisation of a wetland macrofaunal community following a drought: the importance of deep water refugia. *in review*, New Zealand Journal of Marine and Freshwater Research.
- Mikheev, P., M.G. Jarvis, C.D. Matthaei, **T. Ingram**, M. Reid, A. Nikiforov, I. Chernienko and G.P. Closs. Homing and straying of brown trout in catchment of large New Zealand river evaluated by otolith microchemistry. *in review*, Freshwater Biology.
- Augsburger, J., M. Jarvis, G. Wallis, T. King, **T. Ingram**, A. Hicks and G.P. Closs. Landscape biogeography and population structuring of a facultatively amphidromous fish. *in revision*, Molecular Ecology.
- Service, C.N., **T. Ingram**, L. Henson, P. Paquet, C. Picard and C.T. Darimont. Intrapopulation foraging niche variation between phenotypes and genotypes of Spirit bear populations. *in review*, Ecology and Evolution.

natural history notes, reviews, and commentary

- Ingram, T.** 2020. Book review: Pruning the tree of methods in phylogenetic ecology. Trends in Ecology and Evolution 35: 377-378.
- Costa-Pereira, R., **T. Ingram**, F.L. Souza and M.S. Araújo. 2016. *Bothrops mattogrossensis* (Mato Grosso Lancehead). Diet. Herpetological Review 47: 142.
- Ingram, T.** and D.L. Mahler. 2011. Perspective: Niche diversification follows key innovation in Antarctic fish radiation. Molecular Ecology 20: 4590-4591.

software

- Maintainer, **surface**: R package for modeling convergent evolution.
(19,321 cumulative downloads from CRAN, January 2013 to February 2019).
- Contributor, **motmot2.0**: R package for phylogenetic comparative analysis.

FUNDING HISTORY

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| University of Otago Research Grant (NZ\$25,425)
<i>Relationships between “lake snow” and native fish populations in the depths of New Zealand lakes</i> | 2017-2018 |
| Marsden Fast-Start Grant (NZ\$300,000)
<i>The causes and consequences of multidimensional individual specialization in freshwater fish</i> | 2015-2018 |
| University of Otago Research Grant (NZ\$24,950)
<i>The genetics of multidimensional niche variation in a natural population</i> | 2015-2016 |
| University of Otago Research Grant (NZ\$20,209)
<i>Evolutionary consequences of species introduction for the native New Zealand fish fauna</i> | 2014-2015 |

AWARDS AND FELLOWSHIPS

Young Investigators Award, American Society of Naturalists (US\$500 + travel)	2014
Thomas M. Frost Award, Ecological Society of America (US\$500)	2012
Miyata Grant for Field Research in Herpetology, Harvard MCZ (US\$5210)	2012
NSERC Postdoctoral Fellowship (CAD\$40,000/year)	2011-2013
<i>FroSpects</i> Exchange Grant, European Science Foundation (~CAD\$2000)	2011
NESCent Short-Term Visitor Fellowship (~US\$1000)	2009
Visiting Studentship, University of Canterbury (~NZ\$3000)	2009
UBC Zoology Graduate Student Travel Award (CAD\$500/year)	2009-2010
NSERC PGS D3 Graduate Fellowship (CAD\$21,000/year)	2008-2011

INVITED SEMINARS

- University of Otago, Dept of Botany, Dunedin, NZ. 2019. “Convergences and divergences during adaptive radiation”.
- University of Otago, Dept of Zoology, Dunedin, NZ. 2018. “The dimensionality of individual niche variation”.
- University of Queensland, Brisbane, Australia. 2018. “The dimensionality of individual niche variation”.
- Victoria University of Wellington, Wellington, NZ. 2018. “The dimensionality of individual niche variation”.
- Massey University, Palmerston North, NZ. 2018. “The dimensionality of individual niche variation”.
- Universidade Estadual de Sao Paulo, Rio Claro, Brazil. 2015. “Convergences and divergences during adaptive radiation”.
- University of New South Wales, Sydney, Australia. 2014. “Convergences and divergences during adaptive radiation”.
- University of Canterbury, Christchurch, NZ. 2013. “Convergences and divergences during adaptive radiation”.
- University of Otago, Dept of Zoology, Dunedin, NZ. 2012. “Food web interactions, environmental gradients, and the diversification of fishes”.
- Harvard University, Cambridge MA. 2011. “The role of environmental gradients and food web interactions in fish diversification”.
- Eawag, Kastanienbaum, Switzerland. 2011. “The role of environmental gradients and food web interactions in fish diversification”
- University of Texas at Austin, Austin TX. 2011. “Adaptive radiation and the evolution of trophic niches”.
- Simon Fraser University, Vancouver BC. 2010. “Ecological speciation and community assembly in the northeast Pacific rockfishes”.
- NESCent, Durham NC. 2009. “Niche diversification, community assembly and phylogenetic distinctiveness in northeast Pacific rockfish”.

CONFERENCE PROCEEDINGS (selected sole- or first-author talks)

- Competition and resources shape multidimensional trophic niche overlap in Brazilian thin-toed frogs (*Leptodactylus* sp). World Congress of Herpetology 2020, Dunedin, NZ.
- Carryover effects of larval environment on individual niche variation of adult common bullies. New Zealand Freshwater Sciences Society 2018, Nelson, NZ.

The dimensionality of individual niche variation. American Society of Naturalists Meeting 2018, Asilomar CA.

Analysing multivariate niches at the individual level. Statistics in Ecology and Environmental Monitoring 2017, Queenstown, NZ.

Macroevolution of the dewlap and diversification of *Anolis* lizards. Evolution 2017, Portland OR.

Variation in common bullies along a depth gradient in Lake Wanaka. New Zealand Freshwater Sciences Society 2016, Invercargill, NZ.

Monitoring individual niche variation in small fish via mark-recapture and non-lethal gastric lavage. New Zealand Freshwater Sciences Society 2015, Wellington, NZ.

Widespread positive but weak assortative mating by diet within stickleback populations. Evolution 2015, Guarujá, Brazil.

Convergences and divergences during adaptive radiation. ASN Young Investigators' Symposium, Evolution 2014, Raleigh NC.

Adaptive radiation in food webs and the reality of trophic levels on macroevolutionary timescales. Ecological Society of America Annual Meeting 2013, Minneapolis MN.

A new comparative perspective on exceptional ecomorphological convergence in Caribbean anoles. World Congress of Herpetology 2012, Vancouver BC.

Using phylogenies to test for speciation along α - and β -niche axes in adaptive radiations. FroSpects Niche Theory and Speciation Workshop 2011, Kesthely, Hungary.

Food web consequences of stickleback adaptation to an intraguild predator. Western Society of Naturalists 2010, San Diego CA.

Speciation along a depth gradient in a marine adaptive radiation. Evolution 2010, Portland OR.

Trait-based assembly and adaptive radiation in Pacific rockfish. Ecological Society of America Annual Meeting 2009, Albuquerque NM.

Trait-based assembly and adaptive radiation in Pacific rockfish. Evolution 2009, Moscow, ID.

ACADEMIC SERVICE

Associate Editor: *American Naturalist* (25 manuscripts handled) 2017-present
 Associate Editor: *Ecology and Evolution* (39 manuscripts handled) 2016-present

Manuscripts reviewed for:

Ecology Letters, *Evolution*, *Ecology*, *American Naturalist*, *Biology Letters*,
Trends in Ecology and Evolution, *Nature Ecology and Evolution*, *Molecular Ecology*,
Proceedings of the Royal Society B, *Methods in Ecology and Evolution*, *Oikos*,
Systematic Biology, *Biological Journal of the Linnean Society*, *Ecology and Evolution*,
Global Change Biology, *Global Ecology and Biogeography*, *Journal of Animal Ecology*,
 and other journals (75 reviews 2008-present)

Grant proposals reviewed for: *National Science Foundation CAREER*, NERC, Netherlands Organisation for Scientific Research, *National Geographic*.

Theses examined for: University of Otago (PhD, MSc, Hons), University of Auckland (PhD), Victoria University of Wellington (MSc), University of Waikato (MSc)

Society Memberships: *American Society of Naturalists*, *Society for the Study of Evolution*, *Ecological Society of America*, *New Zealand Freshwater Sciences Society*.

OUTREACH ACTIVITIES

School visits, Kaingaroa and Te One Schools, Rēkohu/Chatham Island	2019
Consultant, Participatory Science Platform project <i>Ka Hao te Rakatahi</i>	2018-
Participant, Science Wananga organised by Moriori Trust, Rēkohu/Chatham Island	2017
Presenter, public events at Te Nohoaka o Tukiauau/Sinclair Wetlands (× 3)	2016-
Trustee, Te Nohoaka o Tukiauau/Sinclair Wetlands Trust	2016-
Interview, Radio New Zealand (Our Changing World)	2016
Interview, Radio Waatea	2014
Occasional Contributor, <i>Anole Annals</i> weblog (http://www.anoleannals.org/)	2012-

TEACHING***Programme and Course Co-ordination***

University of Otago:

Deputy Director, Ecology Programme, University of Otago	2018 (acting), 2020-
Ecology 495 Master's Thesis Preparation	2018, 2020-
Ecology 490 Honours Research Project	2018, 2020-
Ecology 480 Postgraduate Diploma Research Project	2018, 2020-
Ecology 313 Ecology Field Course	2015, 2019-
Zoology 318 Freshwater Ecology	2014-

Lecturer

University of Otago:

Ecology 211 Ecology of Communities and Ecosystems	2018-
Ecology 212 Ecological Applications	2013-2017
Ecology 313 Ecology Field Course	2014-
Ecology 314 Tropical Field Course	2019
Zoology 222 Evolutionary Biology	2017-
Zoology 316 Biological Data Analysis and Computing	2014-2016
Zoology 318 Freshwater Ecology	2013-
Zoology 416 Freshwater Ecology	2014-

University of British Columbia:

Biology 402 Aquatic Ecology (guest lecturer)	2007, 2011
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Teaching Assistant

University of British Columbia:

Biology 418 Evolutionary Ecology, Biology 336 Evolutionary Genetics, Biology 300 Biometrics, Biology 402 Aquatic Ecology	2006-2011
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University of Victoria:

Biology 345 Animal Behavior, Biology 190b Introductory Biology	2005-2006
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GRADUATE STUDENT SUPERVISION**Primary Supervisor:**

Mitra Darestani (co-supervised by Jon Waters and Gerry Closs)	Ph.D. 2018-
Motia Ara (co-supervised by Graham Wallis)	Ph.D. 2018-
Marine Richarson (co-supervised by Robert Poulin)	Ph.D. 2015-2020
Tyler Kleyzen	M.Sc. 2020-
Grace Yee (co-supervised by Priscilla Wehi, Landcare Research)	M.Sc. 2017-2018
Nicky Kerr (co-supervised by Christoph Matthaei)	M.Sc. 2015-2017
Scott Morrison	M.Sc. 2014-2016
Oly Hall	P.G.Dip.Sci 2018

Co-supervisor:

Daniel Zamorano (30%, primary supervisor Christoph Matthaei)	Ph.D. 2020-
Pavel Mikheev (10%, primary supervisor Gerry Closs)	Ph.D. 2017-2019
Leonardo Maia Durante (20%, primary supervisor Steve Wing)	Ph.D. 2017-
Rose Stuart (30%, primary supervisor Gerry Closs)	Ph.D. 2017-
Jane Goodman (20%, primary supervisor Gerry Closs)	Ph.D. 2015-
Jason Augspurger (20%, primary supervisor Gerry Closs)	Ph.D. 2014-2017
Anusha Beer (30%, primary supervisor Haseeb Randhawa)	M.Sc. 2016-2017

Visiting Student Mentoring:

Christina Service (Ph.D., University of Victoria, Canada)	2017-2018
Raul Costa Pereira (Ph.D., Universidade Estadual Paulista, Brazil)	2017
Grégoire Saboret (M.Sc., École Normale Supérieure de Lyon)	2018

Undergraduate, Intern, and Research Assistant Mentoring

University of Otago: Amélie Hoste, Victor Bailhache, Daisy Abraham, Audrey Bony, Nick Kelly, Amirah Osama, Taylor Hamlin, Zuri Burns, Steph Bennington, Ludovic Vincent, Lucian Funnell, Jules Travert, Alex Connolly, Jolyn Chia, Leonardo Maia Durante, Olivia McPherson, Scott Morrison

University of Texas: Racine Rangel, Dyna Poch, Amy Doan, Connor French, Cole Thompson, Kim Hendrix (K-12 Teacher), Louisa Torrance (K-12 Teacher).

Harvard: Tanner Strickland

UBC: Michaela Martin, Anita Norman, Travis Tai

Committee Member:

Jerusha Bennett (Ph.D. 2019-), Olwyn Friesen (Ph.D. 2015-2018),
Amanda Valois (Ph.D. 2014-2015), Anthony Stumbo (Ph.D. 2013-2016)

Other Mentoring Activities

Co-coordinator, Department of Zoology Postgraduate Workshop Series	2015-
Led sessions on <i>Reviewing Manuscripts</i> , <i>Student-Supervisor Relationships</i> , <i>Being a Postdoc</i> , and <i>Open Science</i>	