List of achievements

Guillaume Guénard, Ph. D. Biology

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**Address:** 2243 rue du Coteau, Saint-Lin-Laurentides QC, J5M 1Z9, Canada, (514) 707-9569

# Peer-reviewed journal articles

* Guénard, G. & Legendre, P. 2022. *Hierarchical Clustering with Contiguity Constraint in R.* Journal of Statistical Software 103(7): 1–26 doi: [10.18637/jss.v103.i07](https://doi.org/10.18637/jss.v103.i07)
* Guénard, G., Morin, J., Matte, P., Secretan, Y., Valiquette E. & Mingelbier, M. 2020. *Deep learning habitat modeling for moving organisms in rapidly changing estuarine environments: A case of two fishes.*  Estuarine Coastal and Shelf Science 238(106713): 1–10 doi: [10.1016/j.ecss.2020.106713](https://doi.org/10.1016/j.ecss.2020.106713)
* Guénard, G. & Legendre, P. 2018. *Bringing multivariate support to multiscale codependence analysis: assessing the drivers of community structure across spatial scales.*  Methods in Ecology and Evolution 9(2): 292–304 doi: [10.1111/2041-210X.12864](https://doi.org/10.1111/2041-210X.12864)
* Guénard, G., Lanthier, G., Harvey-Lavoie, S., Macnaughton, C. J., Senay, C., Lapointe, M., Legendre, P. & Boisclair, D. 2017. *Modelling habitat distribution for multiple species using phylogenetics.*  Ecography 40(9): 1088–1097 doi: [10.1111/ecog.02423](https://doi.org/10.1111/ecog.02423)
* Harvey-Lavoie, S., Cooke, S. J., Guénard, G. & Boisclair, D. 2016. *Differences in movements of northern pike inhabiting rivers with contrasting flow regimes.*  Ecohydrology 9(8): 1687–1699 doi: [10.1002/eco.1758](https://doi.org/10.1002/eco.1758)
* Guénard, G., Lanthier, G., Harvey-Lavoie, S., Macnaughton, C. J., Senay, C., Lapointe, M., Legendre, P. & Boisclair, D. 2016. *A spatially-explicit assessment of the fish population response to flow management in a heterogeneous landscape.*  Ecosphere 7(e01252): 1–13 doi: [10.1002/ecs2.1252](https://doi.org/10.1002/ecs2.1252)
* Legendre, L. J., Guénard, G., Botha-Brink, J. & Cubo, J. 2016. *Palaeohistological evidence for ancestral endothermy in Archosaurs.* Systematic Biologie 65(6): 989–996 doi: [10.1093/sysbio/syw033](https://doi.org/10.1093/sysbio/syw033)
* Majal, E., Guénard, G., Schäfer, R. B. & von der Ohe, P. C. 2016. *Evolutionary patterns and physicochemical properties explain macroinvertebrate sensitivity to heavy metals.*  Ecological Applications 26(4): 1249–1259 doi: [10.1890/15-0346](https://doi.org/10.1890/15-0346)
* Guénard, G., Boisclair, D. & Legendre, P. 2015. *Phylogenetics to help predict active metabolism.* Ecophere 6(62): 1–11 doi: [10.1890/ES14-00479.1](https://doi.org/10.1890/ES14-00479.1)
* Guénard, G., von der Ohe, P. C., Walker, S. C., Lek, S. & Legendre, P. 2014. *Using phylogenetic information and chemical properties to predict species tolerances to pesticides.*  Proceedings of the Royal Society B: Biological Sciences 281(20133239): 1–9 doi: [10.1098/rspb.2013.3239](https://doi.org/10.1098/rspb.2013.3239)
* Guénard, G., Legendre, P. & Peres-Neto, P. 2013. *Phylogenetic eigenvector maps (PEM): a framework to model and predict species traits using directed graphs.*  Methods in Ecology and Evolution 4(12): 1120–1131 doi: [10.1111/2041-210X.12111](https://doi.org/10.1111/2041-210X.12111)
* Guénard, G., Boisclair, D., Ugedal, O., Forseth, T., Flemming, I. A. & Jonsson, B. 2012. *The bioenergetics of density-dependent growth in Arctic char.*  Canadian Journal of Fisheries and Aquatic Sciences 69(10): 1651–1662 doi: [10.1139/F2012-093](https://doi.org/10.1139/F2012-093)
* Guénard, G., Boisclair, D., Ugedal, O., Forseth, T., Flemming, I. A. & Jonsson, B. 2012. *An experimental study of the multiple effects of brown trout, Salmo trutta, on the bioenergetics of two Arctic char, Salvelinus alpinus, morphs.*  Journal of Fish Biology 81(4): 1248–1270 doi: [10.1111/j.1095-8649.2012.03414.x](https://doi.org/10.1111/j.1095-8649.2012.03414.x)
* Walker, S. C., Guénard, G., Sólymos, P. & Legendre, P. 2012. *Multiple-Table Data in R with the multitable Package.* Journal of Statistical Software 51(8): 1–38 doi: [10.18637/jss.v051.i08](https://doi.org/10.18637/jss.v051.i08)
* Guénard, G., von der Ohe, P. C., de Zwart, D., Legendre, P. & Lek, S. 2011. *Using phylogenetic information to predict tolerance to toxic chemicals.*  Ecological Applications 21(8): 3178–3190 doi: [10.1890/10-2242.1](https://doi.org/10.1890/10-2242.1)
* Guénard, G., Legendre, P., Boisclair, D. & Bilodeau, M. 2010. *Multiscale codependence analysis: an integrated approach to analyse relationships across scales.*  Ecology 91(10): 2952–2964 doi: [10.1890/09-0460.1](https://doi.org/10.1890/09-0460.1)
* Guénard, G., Boisclair, D., Ugedal, O., Forseth, T., Flemming, I. A. & Jonsson, B. 2010. *Bioenergetic and behavioural differences between two morphologically distinct Arctic charr populations.*  Canadian Journal of Fisheries and Aquatic Sciences 67(3): 580–595 doi: [10.1139/F10-004](https://doi.org/10.1139/F10-004)
* Shinn, C., Dauba, F., Grenouillet, G., Guénard, G. & Lek, S. 2009. *Temporal Variation of Heavy Metal Contamination in Fish of the River Lot in Southern France.*  Ecotoxicology and Environmental Safety 72(7): 1957–1965 doi: [10.1016/j.ecoenv.2009.06.007](https://doi.org/10.1016/j.ecoenv.2009.06.007)
* Guénard, G., Boisclair, D., Ugedal, O., Forseth, T. & Jonsson, B. 2008. *Comparison between activity estimates obtained using bioenergetic and behavioural analyses.*  Canadian Journal of Fisheries and Aquatic Sciences 65(8): 1705–1720 doi: [10.1139/F08-080](https://doi.org/10.1139/F08-080)
* Chidami, S., Guénard, G. & Amyot, M. 2007. *Underwater infrared video system for behavioral studies in lakes.*  Limnology and Oceanography: Methods 5(10): 571–578 doi: [10.4319/lom.2007.5.371](https://doi.org/10.4319/lom.2007.5.371)

# Authored conference presentations

* Morin, J., Bachand, M., Guénard, G. & Werick, B. 2017. *An ecosystem-friendly rule curve for the Rainy-Namakan system.*  International Rainy-Lake of the Woods Watershed Forum – International Falls, MN, USA
* Guénard, G., Lanthier, G., Harvey-Lavoie, S., Macnaughton, C. J., Senay, C., Lapointe, M., Legendre, P. & Boisclair, D. 2017. *Community-wide habitat modelling with phylogenetic and spatial eigenvector maps: river fishes distribution.*  Canadian Conference for Fisheries Research – Montreal, QC, Canada
* Guénard, G., Harvey-Lavoie, S., Macnaughton, C. J., Senay, C. & Boisclair, D. 2015. *Cartographie de l’effet de différents régimes de débit sur la densité et la diversité des poissons.*  Symposium du Groupe de Recherche Inter-universitaire en Limnologie – St-Hypolite, QC, Canada
* Guénard, G., Harvey-Lavoie, S., Macnaughton, C. J., Senay, C. & Boisclair, D. 2014. *Assessing the effect of flow regimes on fish density.*  American Fisheries Society Annual Meeting – Quebec City, QC, Canada
* Harvey-Lavoie, S., Guénard, G., Wheeland, L., Cooke, S. J. & Boisclair, D. 2014. *Modelling northern pike habitat selection in a river subject to hydropeaking.*  ISE Ecohydraulics conference – Trondheim, Norway
* Boisclair, D., Cooke, S. J., McLaughlin, R. & Guénard, G. 2014. *An ecosystemic approach to assess the effects of flow modifications related to hydropower on fish populations.*  ISE Ecohydraulics conference – Trondheim, Norway
* Boisclair, D., Cooke, S. J., McLaughlin, R. & Guénard, G. 2013. *A framework to assess the consequences of the fragmentation of aquatic ecosystems on fisheries productivity.*  Biophysical Coupling Workshop of the Great Lakes Fisheries Commission – Huron, Ohio, USA
* Guénard, G., Walker, S. C., von der Ohe, P. C. & Legendre, P. 2013. *Phylogenetics to help predicting fish swimming costs.*  Canadian Conference for Fisheries Research – Windsor, ON, Canada
* Guénard, G., Walker, S. C., von der Ohe, P. C. & Legendre, P. 2012. *Predicting the tolerance of animal species to chemical using phylogenetics and linear solvation energy parameters.*  Symposium of the Society for Environmental Toxicology and Chemistry – Long Beach, CA, USA
* Guénard, G., von der Ohe, P. C., Walker, S. C. & Legendre, P. 2012. *Adding phylogenetic information to predicting tolerance to chemicals.*  Canadian Conference for Fisheries Research – Moncton, NB, Canada
* Walker, S. C., Guénard, G. & Legendre, P. 2011. *Community ecology with multiple data tables: the interface between data management and analysis.*  Ecological Society of America (ESA) Annual Conference – Austin, TX, USA
* Guénard, G., Walker, S. C., von der Ohe, P. C. & Legendre, P. 2011. *Predicting tolerance to pesticides using phylogeny and compound properties.*  Symposium du Groupe de Recherche Inter-universitaire en Limnologie – St-Hypolite, QC, Canada
* Faggiano, L., Guénard, G., Gevrey, M. & Lek, S. 2010. *Improving data sampling for better ecosystem diagnostic.*  Keybioeffect workshop – Girona, Spain
* Guénard, G., von der Ohe, P. C. & Lek, S. 2009. *A spatially-explicit assessment of pollutants impact and macro-invertebrates diversity and community structure in Danube river.*  Final Modelkey conference – Leipzig, Germany
* Guénard, G., von der Ohe, P. C. & Lek, S. 2009. *Spatial correspondence of chemical status and macro-invertebrates diversity in Danube river.*  Symposium of the Society for Environmental Toxicology and Chemistry – New-Orleans, LA, USA
* Guénard, G., de Zwart, D., von der Ohe, P. C. & Lek, S. 2009. *Predicting sensitivity to pollutants using molecular characters.*  International Symposium for Toxicity Assessment – Metz, France
* Guénard, G. & Boisclair, D. 2008. *Différences morphologiques, comportementales chez deux populations d’omble chevalier et leurs impact sur la croissance, la consommation et l’activité.*  Symposium du Groupe de Recherche Inter-universitaire en Limnologie – Harrington, QC, Canada
* Guénard, G. & Boisclair, D. 2008. *Differences in morphology, energy budget, and activity patterns between arctic charr from two contrasting populations.*  Canadian Conference for Fisheries Research – Halifax, NS, Canada
* Chidami, S., Guénard, G. & Amyot, M. 2007. *Fish decomposition in boreal lakes and biogeochemical implications.*  Canadian Society for Ecology and Evolution – Toronto, ON, Canada
* Guénard, G., Legendre, P., Boisclair, D. & Bilodeau, M. 2007. *Une méthode multi-échelle pour décrire la dépendance spatiale commune entre l’abondance des tacons de saumon de l’At-lantique (Salmo salar, L.) et les variables environnementales utilisées comme descripteurs de leur habitat en rivière.*  Symposium du Groupe de Recherche Inter-universitaire en Limnologie – Harrington, QC, Canada
* Guénard, G. & Boisclair, D. 2006. *Assessing the effect of fish density on the consumption and activity rate of Arctic charr.*  Canadian Conference for Fisheries Research – Calgary, AB, Canada
* Guénard, G. & Boisclair, D. 2005. *Experimental comparison of activity measurements made using spontaneous swimming models and caesium bio-accumulation in fish.*  Canadian Conference for Fisheries Research – Windsor, ON, Canada
* Guénard, G., Legendre, P. & Boisclair, D. 2005. *Describing the habitat of Atlantic salmon parr (Salmo salar) using the common spatial dependence between fish abundance and environmental variables: validation and application of a new multi-scale method.*  Ecological Society of America / INTECOL joint meeting – Montreal, QC, Canada
* Guénard, G. & Boisclair, D. 2001. *Perspective of the predator-prey relationship through different spatial scales using horizontal hydro-acoustic scanning approach.*  Canadian Conference for Fisheries Research – Toronto, ON, Canada

# Research reports

* Guénard, G. 2018. *Environmental conditions structuring benthic invertebrate communities* *in the St. Lawrence River: evidencing the effect of chemical pollution* (in French). Water Quality Monitoring and Surveillance Division, Environment and climate changes Canada. Contract #3000656770. Montreal, QC, Canada. 20 pp. [LINK](http://www.dx.doi.org/10.13140/RG.2.2.29334.80962)
* Morin, J., Bachand, M., Richard, J. H., Champoux, O., Martin, S. & Guénard, G. 2016. *Habitat modeling of the Lake Sturgeon and Walleye spawning habitat of the Rainy River*. Prepared for the International Join Commission (IJC). Hydrology and Ecohydraulics Section, Environment and Climate Change Canada. Scientific Report SR111 MSC. Quebec City, QC, Canada. 132 pp. [LINK](http://www.dx.doi.org/10.13140/RG.2.2.17905.28004)
* Boisclair, D., Lapointe, M., Saint-Hilaire, A., Rasmussen, J. B., Senay, C., Lanthier, G., Bourque, G., Guénard, G., Macnaughton, C. J. & Harvey-Lavoie, S. 2016. *Modelling the effects of chemical and physical drivers on fisheries* *productivity metrics across rivers of varying hydrological regimes:* *lessons learned from NSERC HydroNet* 2009-2015. Science Advisisory Secretariat Research Document. 2016/033. Department of Fisheries and Oceans Canada. viii + 61 p. [LINK](http://www.dfo-mpo.gc.ca/csas-sccs/Publications/ResDocs-DocRech/2016/2016_033-eng.html)
* Guénard, G. & Boisclair, D. 2015. *Data and literature review on the bioenergetics of Salmoninae for Mid* *Columbia River Adult Habitat use Assessment* (CLBMON-18). Prepared for BC Hydro, P.O. Box 8910 Vancouver, B.C. V6B 4N1, Canada. Département de sciences biologiques. . Université de Montréal C.P. 6128 succ. centre-ville Montreal QC, Canada. 25 pp. [LINK](http://www.dx.doi.org/10.13140/RG.2.2.20526.77124)
* Ugedal, O., Forseth, T., Jonsson, B., Daverdin, R., Einum, S., Fleming, I., Saksgård, R., Boisclair, D. & Guénard, G. 2005. *Competition within and between fish species – preliminary research* (In Norwegian). Page 67–69 in Jonsson, B. & Yoccoz, N. G. (eds.) *Ecosystem dynamics: human impact on biodiversity. NINA’s strategic* *institute programs 2001–2005* (In Norwegian). NINA Temahefte. 33. Norsk Institutt for Naturforskning, Trondheim, Norway. 89 pp. [LINK](http://www.nina.no/archive/nina/PppBasePdf/temahefte/033.pdf)

# Software packages

[adespatial](https://CRAN.R-project.org/package=adespatial)

Dray, S., Bauman, D., Blanchet, G., Borcard, D., Clappe, S., Guenard, G., Jombart, T., Larocque, G., Legendre, P., Madi, N. & Wagner, H. 2022. *adespatial: Multivariate Multiscale Spatial Analysis*. Description: Tools for the multiscale spatial analysis of multivariate data. Several methods are based on the use of a spatial weighting matrix and its eigenvector decomposition (Moran’s Eigenvectors Maps, MEM). R package version 0.3-20

[constr.hclust](https://github.com/guenardg/constr.hclust.git)

Legendre, P. & Guénard, G. 2022. Space- And Time-Constrained Clustering Package. Description: Space-constrained or time-constrained agglomerative clustering from a multivariate dissimilarity matrix. R package version 1.6-2

[MPSEM](https://CRAN.R-project.org/package=MPSEM)

Guénard, G. & Legendre, P. 2022. MPSEM: Modeling Phylogenetic Signals using Eigenvector Maps. Description: Computational tools to represent phylogenetic signals using adapted eigenvector maps. R package version 0.4-1

[codep](https://CRAN.R-project.org/package=codep)

Guénard, G., Legendre, P. & Pages B. 2018. Multiscale Codependence Analysis. Description: Computation of Multiscale Codependence Analysis and spatial eigenvector maps, as an additional feature. R package version 0.9-1

[WR](https://github.com/guenardg/Whittaker-Robinson.git)

Legendre, P. & Guénard, G. 2018. Whittaker-Robinson Periodogram Through a C Function Description: Whittaker-Robinson periodogram for univariate series of quantitative data, with permutation tests. R package version 1.0-1

# Work in progress (short list)

* Guénard, G., Harvey-Lavoie, S., Wheeland, L., Cooke, S. J. & Boisclair, D. *A novel analytic framework to integrate the effect of a contextual variable into habitat use models using presence-only data.*  [Article]
* Guénard, G., Harvey-Lavoie, S., MacNaughton, C. J., Senay, C., Boisclair, D. & Legendre, P. *An spatially-explicit assessment of the physical drivers of fish community assemblages in regulated and unregulated rivers.*  [Article]