

List of achievements

Guillaume Guénard, Ph. D. Biology

Compiled: 2022-12-29

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
- 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
- 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
- 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
- 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
- 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
- Legendre, L. J., Guénard, G., Botha-Brink, J. & Cubo, J. 2016. *Palaeohistological evidence for ancestral endothermy in Archosaurs*. Systematic Biology 65(6): 989–996 doi: 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
- Guénard, G., Boisclair, D. & Legendre, P. 2015. *Phylogenetics to help predict active metabolism*. Ecophere 6(62): 1–11 doi: 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
- 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

- 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
- 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
- Walker, S. C., Guénard, G., Sólomos, 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
- 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
- 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
- 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
- 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
- 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
- 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

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 hydropowering*. 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-Hyppolite, 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](#)
 - 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 Joint Commission (IJC). Hydrology and Ecohydraulics Section, Environment and Climate Change Canada. Scientific Report SR111 MSC. Quebec City, QC, Canada. 132 pp. [LINK](#)
 - 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 Advisory Secretariat Research Document. 2016/033. Department of Fisheries and Oceans Canada. viii + 61 p. [LINK](#)
 - 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](#)
 - Ugedal, O., Forseth, T., Jonsson, B., Dæverdin, 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](#)
-

Software packages

- 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** 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** 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** 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** 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]
-