

Pierre Legendre

Département de sciences biologiques,
Université de Montréal,
C.P. 6128, succursale Centre-ville,
Montréal, Québec, Canada H3C 3J7

Phone 514-343-7591

Fax 514-343-2293

E-mail: Pierre.Legendre@umontreal.ca

WWW page: <http://numericecology.com>

Teaching pages : <http://biol09.biol.umontreal.ca/>

Career summary

M.Sc. (zoology), McGill University, 1969; Ph.D. (biology), University of Colorado, 1971. Postdoctoral fellow at *Genetiska Institutionen*, Lunds Universitet, Sweden, in 1971-72. Research associate, then Research director at Université du Québec à Montréal, and finally Professor in the *Département de physique*. In 1980, moved to *Département de sciences biologiques*, Université de Montréal (rank: Associate Professor). Full Professor in 1984.

Scientific interests

I am a specialist of *numerical ecology*, a sub-discipline of community ecology that I founded. My research concerns in particular the ecological and biogeographic processes that generate and organize biodiversity through space and time. An important component of my research in fundamental ecology is the development of quantitative methods to analyse multivariate ecological data. I work at the moment on adapting and transferring the methods developed in spatial community ecology to landscape genetics, in particular for the study of genetic beta diversity.

Honours

- 1986 – *Michel-Jurdant* prize for Environment Sciences, Association canadienne-française pour l'Avancement des Sciences (ACFAS).
- 1989-1991 – Killam Research Fellow, Canada Council for the Arts.
- 1992 – Elected *Fellow of the Royal Society of Canada* (Academy of Science).
- 1994 – Laureate of the *Distinguished Statistical Ecologist Award* of the *International Congress of Ecology (INTECOL)*.
- 1995 – Laureate of the Romanowski Medal (environmental science) of the Royal Society of Canada.
- 1999 – Laureate of the *Twentieth Century Distinguished Service Award* “for outstanding contribution to the synergistic development and direction of statistics, ecology, environment and society” awarded by the Ninth Lukacs Symposium “*Frontiers of Environmental and Ecological Statistics for the 21st Century*”.
- 2002 – *ISI Highly Cited Researcher 2001 in Ecology/Environment*, Institute for Scientific Information, USA (<http://ISIHIGHLYCITED.COM/>).
- 2005 – Laureate of *Prix Marie-Victorin*, the annual prize of the Government of Québec for highest achievements in research in pure and applied sciences.

- 2007 – Officer of the *National Order of Québec*.
- 2011 – Laureate of Université de Montréal *Excellence in Teaching Award*, *Full Professor* category.
- 2011 – Laureate of the *Excellence in Teaching Award* of the Faculty of Arts and Science, Université de Montréal, Science Sector.
- 2012 – Laureate of the Canadian Council of University Biology Chairs *Career Achievement Award*.
- 2013 – Laureate of the Canadian Society for Ecology and Evolution *President's Award*.
- 2014 – *Highly Cited Researcher 2014 in Environment/Ecology*, Thomson Reuters, USA (<http://HighlyCited.com/>).

Scientific production

- 10 books on numerical ecology;
- 13 contributions to other books (chapters);
- 273 papers published or in press in refereed journals; 7 papers submitted;
- 21 refereed conference proceedings;
- 1 English-French vocabulary of numerical ecology and statistics
- 261 papers presented at scientific conferences (47 keynote);
- 323 research seminars;
- 65 short courses given in 40 universities and scientific institutes around the world;
- 16 participations to international working groups.

Education

- B.A., Collège Saint-Viateur, Outremont, 1965 (College affiliated to Université de Montréal).
- Two years of B.Sc. in biological sciences, Université de Montréal, 1965–1967.
- M.Sc., McGill University, 1969 (Zoology).
- Ph.D., University of Colorado, 1971 (Biology).

Positions held

- 1971–72: Postdoctoral fellow (CNRC), Genetiska Institutionen, Lunds Universitet, Sweden.
- 1972–73: Research associate, Centre de recherche écologique, Univ. du Québec à Montréal.
- 1973–80: Research director, Centre de recherche en sciences de l'environnement, Université du Québec à Montréal. NSERC Research Associate, 1977-80.
- 1980: Professor, Département de physique, Université du Québec à Montréal.
- 1980–84: Associate professor, Département de sciences biologiques, Université de Montréal.
- 1984– : Full professor, Département de sciences biologiques, Université de Montréal.

Impact factors

h-index on *Web of Knowledge*: **60** (20011 citations, not counting citations of my books).

h-index on *Google Scholar*: **82** (52943 citations, including 13610 citations of my books). See <http://scholar.google.ca/citations?user=daJE-XsAAAAJ>

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Publications

1. Books

- 1.1 Legendre, L. & P. Legendre. 1979. Écologie numérique. Tome 1: Le traitement multiple des données écologiques. Collection d'Écologie no 12. Masson, Paris et les Presses de l'Université du Québec. xiv + 197 p.
- 1.2 Legendre, L. & P. Legendre. 1979. Écologie numérique. Tome 2: La structure des données écologiques. Collection d'Écologie no 13. Masson, Paris et les Presses de l'Université du Québec. viii + 254 p.
- 1.3 Legendre, L. & P. Legendre. 1983. Numerical ecology. Developments in environmental modelling, 3. Elsevier Scientific Publ. Co., Amsterdam Netherlands. xvi + 419 p.
- 1.4 Legendre, L. & P. Legendre. 1984. Écologie numérique, deuxième édition revue et augmentée. Tome 1: Le traitement multiple des données écologiques. Masson, Paris et les Presses de l'Université du Québec. xv + 260 p.
- 1.5 Legendre, L. & P. Legendre. 1984. Écologie numérique, deuxième édition revue et augmentée. Tome 2: La structure des données écologiques. Masson, Paris et les Presses de l'Université du Québec. viii + 335 p.
- 1.6 Legendre, P. & L. Legendre [eds.] 1987. Developments in numerical ecology. NATO ASI series, Vol. G-14. Springer-Verlag, Berlin. xi + 585 pages.
- 1.7 Legendre, P. & L. Legendre. 1998. Numerical ecology, 2nd English edition. Elsevier Science BV, Amsterdam. xv + 853 pages. <<http://www.fas.umontreal.ca/biol/legendre/numecol.html>>
- 1.8 Borcard, D., F. Gillet and P. Legendre. 2011. Numerical ecology with R. Use R! series, Springer Science, New York. xi + 306 pp. ISBN: 978-1-4419-7975-9. e-ISBN: 978-1-4419-7976-6.
- 1.9 Legendre, P. and L. Legendre. 2012. Numerical ecology, 3rd English edition. Developments in Environmental Modelling, Vol. 24. Elsevier Science BV, Amsterdam. xiv + 990 pp. ISBN-13: 978-0444538680. <<http://www.elsevierdirect.com/ISBN/9780444538680/Numerical-Ecology>>
- 1.10 Borcard, D., F. Gillet and P. Legendre. 2014. *Numerical ecology with R, Chinese edition* (translation : J. Lai, Institute of Botany, Chinese Academy of Sciences). Higher Education Press, Beijing. (Published May 14, 2014).



2. Refereed book chapters

- 2.1 Legendre, L. & P. Legendre. 1978. Associations. Pp. 261-272 in: *Phytoplankton Manual. Monographs on oceanographic methodology no 6*. UNESCO, Paris. 338 pp.
- 2.2 Legendre, P. & L. Legendre. 1982. Échantillonnage et traitement des données. Ch. 3 (pp. 163-216) in: S. Frontier [éd.] *Stratégies d'échantillonnage en écologie. Collection d'Écologie no 16*. Masson, Paris. xviii + 494 pp.
- 2.3 Legendre, P. 1983. Numerical ecology: developments and recent trends. 505-523 in: J. Felsenstein [ed.] *Numerical taxonomy. Nato Advanced Study Institute Series G (Ecological Sciences), No. 1*. x + 644 pp.
- 2.4 Legendre, P. 1987. Constrained clustering. Pp. 289-307 in: P. Legendre & L. Legendre [eds.] *Developments in numerical ecology. NATO ASI series, Vol. G-14*. Springer-Verlag, Berlin. xi + 585 pp.
- 2.5 Lapointe, F.-J. & P. Legendre. 1996. Evolution of the marsupial brain: Does it reflect the evolution of behavior? Pp. 187-212 in: *Animal and their environment: A tribute to Paul Pirlot* (ed. by T. Cabana). Orbis, Frelighsburg.
- 2.6 Renaud, J. & P. Legendre. 1997. Nouveaux immigrants et localisation résidentielle. P. 103-127 in: D. Meintel, V. Piché, D. Juteau et S. Fortin [éds.] *Le quartier Côte-des-Neiges à Montréal – Les interfaces de la pluriethnicité*. L'Harmattan, Paris. 323 p.
- 2.7 Legendre, P. et D. Borcard. 2006. Quelles sont les échelles spatiales importantes dans un écosystème ? Chapitre 19 (p. 425-442) in: J.-J. Droesbeke, M. Lejeune et G. Saporta (éds), *Analyse statistique de données spatiales*. Éditions TECHNIP, Paris. 468 pp. ISBN 10 : 2710808730.
- 2.8 Makarenkov, V., D. Kevorkov and P. Legendre. 2006. Phylogenetic network construction approaches. Pp. 61-97 in: *Applied Mycology and Biotechnology, Volume 6: Bioinformatics*. Elsevier Science B. V., Amsterdam.
- 2.9 Legendre, P. 2007. Préface. Pp. III-IV in: Scherrer, B. *Biostatistique*. Chenelière Éducation, Montréal.
- 2.10 Legendre, P. 2010. Coefficient of concordance. Pp. 164-169 in: *Encyclopedia of Research Design, Vol. 1*. N. J. Salkind, ed. SAGE Publications, Inc., Los Angeles. 1776 pp. ISBN: 9781412961271.
- 2.11 Legendre, P. and H. J. B. Birks. 2012. Clustering and partitioning. Chapter 7, pp. 167-200 in: *Tracking Environmental Change using Lake Sediments, Volume 5: Data handling and numerical techniques*. H. J. B. Birks, A. F. Lotter, S. Juggins and J. P. Smol [eds.]. Springer, Dordrecht, The Netherlands. xi + 716 pp.
- 2.12 Legendre, P. and H. J. B. Birks. 2012. From classical to canonical ordination. Chapter 8, pp. 201-248 in: *Tracking Environmental Change using Lake Sediments, Volume 5: Data handling and numerical techniques*. H. J. B. Birks, A. F. Lotter, S. Juggins and J. P. Smol [eds.]. Springer, Dordrecht, The Netherlands. xi + 716 pp.
- 2.13 Legendre, P. 2013. Indicator species: computation. Pp. 264-268 in: *Encyclopedia of Biodiversity, 2nd edition*. Simon Levin [ed.] Academic Press, Waltham, MA, USA.

- 2.14 Boc, A., P. Legendre and V. Makarenkov. 2013. An efficient algorithm for the detection and classification of horizontal gene transfer events and identification of mosaic genes. Pp. 253-260 in: B. Lausen, D. Van den Poel and A. Ultsch [eds] *Algorithms from and for Nature and Life: Classification and data analysis*. Springer International Publishing, Switzerland.

3. Papers published in refereed journals

- 3.1 Legendre, P. & P. Vaillancourt. 1969. A mathematical model for the entities species and genus. *Taxon* 18 (3): 245-252.
- 3.2 Legendre, P. & D. M. Steven. 1969. Dénombrement des chromosomes chez quelques cyprins. *Naturaliste can. (Québec)* 96 (6): 913-918.
- 3.3 Legendre, P. 1970. The bearing of *Phoxinus* (Cyprinidae) hybridity of the classification of its North American species. *Can. J. Zool.* 48 (6): 1167-1177.
- 3.4 Legendre, P. 1970. Comptage de vertèbres chez quelques cyprinidae du Québec et de l'Ontario. *Naturaliste can. (Québec)* 97 (3): 325-329.
- 3.5 Legendre, P. 1971. Circumscribing the concept of the genus. *Taxon* 20 (1): 137-139.
- 3.6 Legendre, P., C. B. Schreck & R. J. Behnke. 1972. Taximetric analysis of selected groups of western North American Salmo with respect to phylogenetic divergences. *Syst. Zool.* 21 (3): 292-307.
- 3.7 Legendre, P. & D. J. Rogers. 1972. Characters and clustering in taxonomy: a synthesis of two taximetric procedures. *Taxon* 21 (5/6): 567-606.
- 3.8 Legendre, P. 1972. The definition of systematic categories in biology. *Taxon* 21 (4): 381-406.
- 3.9 Ahmad A., A. Chodorowski & P. Legendre. 1974. Studies on the effect of pollution on the diatom communities of St. Lawrence River near Montreal. 1. Physico-chemical and biological characterization of the two water masses (Ottawa and St. Lawrence rivers). *Water Pollution Research in Canada* 9: 135-141.
- 3.10 Legendre, P. 1975. A posteriori weighting of descriptors. *Taxon* 24 (5/6): 603-608.
- 3.11 Legendre, P. 1975. A field-trip micro-technique for studying fish leukocyte chromosomes. *Can. J. Zool.* 53 (10): 1443-1446.
- 3.12 Legendre, P. 1976. An appropriate space for clustering selected groups of Western North American Salmo. *Syst. Zool.* 25 (2): 193-195.
- 3.13 Legendre, P. & A. Chodorowski. 1977. A generalization of Jaccard's association coefficient for Q analysis of multi-state ecological data matrices. *Ekologia Polska* 25 (2): 297-308.
- 3.14 Legendre, P., F. Long, R. Bergeron & J.-M. Levasseur. 1978. Inventaire aérien de la faune dans le Moyen Nord québécois. *Can J. Zool.* 56: 451-462.
- 3.15 Legendre, P. & A. Beauvais. 1978. Niches et associations de poissons des lacs de la Radissonie québécoise. *Naturaliste can. (Québec)* 105: 137-158. [Traduction en anglais no 1275421 ENV. par le Bureau des Traductions, Secrétariat d'Etat, pour le compte de Environnement Canada].

- 3.16 Pinel-Alloul, B., P. Legendre & E. Magnin. 1979. Zooplankton limnétique de 46 lacs et 17 rivières du territoire de la Baie de James. *Can. J. Zool.* 57 (8): 1693-1709.
- 3.17 Legendre, P. 1979. Le protistologue et la taxinomie numérique. *L'Année Biologique* 18: 493-519.
- 3.18 Legendre, P., F. Long & A. Beauvais. 1980. Typologie écologique d'un groupe de lacs du Moyen Nord québécois. *Annales de Limnologie* 16 (2): 135-158.
- 3.19 André, P., P. Legendre & P. P. Harper. 1981. La sélectivité de trois engins d'échantillonnage du benthos lacustre. *Annales de Limnologie* 17: 25-40.
- 3.20 Troussellier, M. & P. Legendre. 1981. A functional evenness index for microbial ecology. *Microb. Ecol.* 7: 283-296.
- 3.21 Legendre, L., M. Fréchette & P. Legendre. 1981. The contingency periodogram: a method of identifying rhythms in series on nonmetric ecological data. *J. Ecol.* 69: 965-979.
- 3.22 Fortin, N. & P. Legendre. 1982. Application de la cartographie écologique à la localisation environnementale d'un réseau routier. *Naturaliste can. (Québec)* 109: 661-670.
- 3.23 Lamarche, A., P. Legendre & A. Chodorowski. 1982. Facteurs responsables de la distribution des gastéropodes dulcicoles dans le fleuve Saint-Laurent. *Hydrobiologia* 89: 61-76.
- 3.24 St-Louis, N. & P. Legendre. 1982. A water quality index for lake beaches. *Water Research* 16: 945-948.
- 3.25 Hudon, C., E. Bourget & P. Legendre. 1983. An integrated study of the factors influencing the choice of the settling site of *Balanus crenatus* cyprid larvae. *Can. J. Fish. Aquat. Sci.* 40: 1186-1194.
- 3.26 Legendre, L. & P. Legendre. 1983. Partitioning ordered variables into discrete states for discriminant analysis of ecological classifications. *Can. J. Zool.* 61: 1002-1010.
- 3.27 Legendre, P. & V. Legendre. 1984. Postglacial dispersal of freshwater fishes in the Québec peninsula. *Can. J. Fish. Aquat. Sci.* 41: 1781-1802.
- 3.28 Legendre, P., D. Planas & M.-J. Auclair. 1984. Succession des communautés de gastéropodes dans deux milieux différant par leur degré d'eutrophisation. *Can. J. Zool.* 62: 2317-2327.
- 3.29 De Puytorac, P., J. Grain, P. Legendre & J. Dévaux. 1984. Essai d'application de l'analyse phénétique à la classification du phylum des Ciliophora. *Journal of Protozoology* 31: 496-507.
- 3.30 Legendre, P. 1984. L'analyse des données en relation avec l'échantillonnage. *Revue d'Entomologie du Québec* 29: 86-100.
- 3.31 Legendre, P., B. Baleux & M. Troussellier. 1984. Dynamics of pollution-indicator and heterotrophic bacteria in a sewage treatment lagoon. *Appl. Environm. Microbiol.* 48: 586-593.
- 3.32 Legendre, P., S. Dallot & L. Legendre. 1985. Succession of species within a community: chronological clustering, with applications to marine and freshwater zooplankton. *American Naturalist* 125: 257-288.
- 3.33 Hudon, C., P. Fradette & P. Legendre. 1986. La répartition horizontale et verticale des larves de homard (*Homarus americanus*) autour des Iles-de-la-Madeleine, golfe du Saint-Laurent. *Can. J.*

- Fish. Aquat. Sci.* 43: 2164-2176.
- 3.34 Gower, J. C. & P. Legendre. 1986. Metric and Euclidean properties of dissimilarity coefficients. *Journal of Classification* 3: 5-48.
- 3.35 Legendre, P. 1986. Reconstructing biogeographic history using phylogenetic-tree analysis of community structure. *Syst. Zool.* 35: 68-80.
- 3.36 Troussellier, M., P. Legendre & B. Baleux. 1986. Modeling of the evolution of bacterial densities in an eutrophic ecosystem (sewage lagoons). *Microbial Ecology* 12: 355-379.
- 3.37 Hudon, C. & P. Legendre. 1987. The ecological implications of growth forms in epibenthic diatoms. *Journal of Phycology* 23: 434-441.
- 3.38 Galzin, R. & P. Legendre. 1987. The fish communities of a coral reef transect. *Pacific Science* 41: 158-165.
- 3.39 Bell, M. A. & P. Legendre. 1987. Multicharacter chronological clustering in a sequence of fossil sticklebacks. *Syst. Zool.* 36: 52-61.
- 3.40 Legendre, P. & M. Troussellier. 1988. Aquatic heterotrophic bacteria: modeling in the presence of spatial autocorrelation. *Limnology and Oceanography* 33: 1055-1067.
- 3.41 Ouimet, C. & P. Legendre. 1988. Practical aspects of modelling ecological phenomena using the cusp catastrophe. *Ecological Modelling* 42: 265-288.
- 3.42 Legendre, P. & M.-J. Fortin. 1989. Spatial pattern and ecological analysis. *Vegetatio* 80: 107-138.
- 3.43 Sokal, R. R., N. L. Oden, P. Legendre, M.-J. Fortin, J. Kim & A. Vaudor. 1989. Genetic differences among language families in Europe. *American Journal of Physical Anthropology* 79: 489-502.
- 3.44 Amanieu, M., P. Legendre, M. Troussellier & G.-F. Frisoni. 1989. Le programme Écothau: théorie écologique et base de la modélisation. *Oceanologica Acta* 12: 189-199.
- 3.45 Troussellier, M. & P. Legendre. 1989. Dynamics of fecal coliform and culturable heterotroph densities in an eutrophic ecosystem: stability of models and evolution of these bacterial groups. *Microbial Ecology* 17: 227-235.
- 3.46 Legendre, P., M. Troussellier, V. Jarry & M.-J. Fortin. 1989. Design for simultaneous sampling of ecological variables: from concepts to numerical solutions. *Oikos* 55: 30-42.
- 3.47 Fortin, M.-J., P. Drapeau & P. Legendre. 1989. Spatial autocorrelation and sampling design in plant ecology. *Vegetatio* 83: 209-222.
- 3.48 Sokal, R. R., N. L. Oden, P. Legendre, M.-J. Fortin, J. Kim, B. A. Thomson, A. Vaudor, R. M. Harding & G. Barbujani. 1990. Genetics and language in European populations. *American Naturalist* 135: 157-175.
- 3.49 Legendre, P., N. L. Oden, R. R. Sokal, A. Vaudor & J. Kim. 1990. Approximate analysis of variance of spatially autocorrelated regional data. *Journal of Classification* 7: 53-75.
- 3.50 Lapointe, F.-J. & P. Legendre. 1990. A statistical framework to test the consensus of two nested classifications. *Syst. Zool.* 39 (1): 1-13.

- 3.51 Ardisson, P.-L., E. Bourget & P. Legendre. 1990. Multivariate approach to study species assemblages at large spatiotemporal scales: The community structure of the epibenthic fauna of the Estuary and Gulf of St. Lawrence. *Can. J. Fish. Aquat. Sci.* 47: 1364-1377.
- 3.52 Hudon, C., P. Legendre, A. Lavoie, J.-M. Dubois & G. Vigeant. 1991. Effets du climat et de l'hydrographie sur le recrutement du homard américain (*Homarus americanus*) dans le nord du golfe du Saint-Laurent. Pp. 161-177 in: Therriault, J.-C. [éd.] Le golfe du Saint-Laurent: petit océan ou grand estuaire? *Can. Spec. Publ. Fish. Aquat. Sci.* 113.
- 3.53 Jarry, V., G.-F. Frisoni & P. Legendre. 1991. Organisation spatiale et modélisation écologique d'un peuplement phytoplanctonique de lagune (étang de Thau, France). *Oceanologica Acta* 14: 473-488.
- 3.54 Dufrêne, M. & P. Legendre. 1991. Geographic structure and potential ecological factors in Belgium. *J. Biogeogr.* 18: 257-266.
- 3.55 Lapointe, F.-J. & P. Legendre. 1991. The generation of random ultrametric matrices representing dendrograms. *Journal of Classification* 8: 177-200.
- 3.56 Legendre, P. & P. Dutilleul. 1991. Comments on Boyle's *Acidity and organic carbon in lake water: variability and estimation of means*. *Journal of Paleolimnology* 6: 103-110.
- 3.57 Simard, Y., P. Legendre, G. Lavoie & D. Marcotte. 1992. Mapping, estimating biomass, and optimizing sampling programs for spatially autocorrelated data: Case study of the Northern Shrimp (*Pandalus borealis*). *Can. J. Fish. Aquat. Sci.* 49: 32-45.
- 3.58 Demers, S., J. Kim, P. Legendre & L. Legendre. 1992. Analyzing multivariate flow cytometric data in aquatic sciences. *Cytometry* 13: 291-298.
- 3.59 Leduc, A., P. Drapeau, Y. Bergeron & P. Legendre. 1992. Study of spatial components of forest cover using partial Mantel tests and path analysis. *Journal of Vegetation Science* 3: 69-78.
- 3.60 Borcard, D., P. Legendre & P. Drapeau. 1992. Partialling out the spatial component of ecological variation. *Ecology* 73: 1045-1055.
- 3.61 Lapointe, F.-J. & P. Legendre. 1992. A statistical framework to test the consensus among additive trees (cladograms). *Syst. Biol.* 41: 158-171.
- 3.62 Dutilleul, P. & P. Legendre. 1992. Lack of robustness in two tests of normality against autocorrelation in sample data. *J. Statist. Comput. Simul.* 42: 79-91.
- 3.63 Élie, D. & P. Legendre. 1992. Autocorrélation spatiale et déplacement de la criminalité. *Criminologie* 25: 139-154.
- 3.64 Bourgault, G., D. Marcotte & P. Legendre. 1992. The multivariate (co)variogram as a spatial weighting function in classification methods. *Mathematical Geology* 24: 463-478.
- 3.65 Bach, P., P. Legendre, M. Amanieu & G. Lasserre. 1992. Strategy of eel (*Anguilla anguilla* L.) exploitation in the Thau lagoon. *Estuarine, Coastal and Shelf Science* 35: 55-73.
- 3.66 Lapointe, F.-J. & P. Legendre. 1992. Statistical significance of the matrix correlation coefficient for comparing independent phylogenetic trees. *Syst. Biol.* 41: 378-384.
- 3.67 Planes, S., A. Lefèvre, P. Legendre & R. Galzin. 1993. Spatio-temporal variability in fish recruitment to a coral reef (Moorea, French Polynesia). *Coral Reefs* 12: 105-113.

- 3.68 Dutilleul, P. & P. Legendre. 1993. Spatial heterogeneity against heteroscedasticity: an ecological paradigm versus a statistical concept. *Oikos* 66: 152-171.
- 3.69 Legendre, P. 1993. Spatial autocorrelation: trouble or new paradigm? *Ecology* 74: 1659-1673 [Invited paper, published as part of a *Special Feature*].
- 3.70 Fromentin, J.-M., F. Ibanez & P. Legendre. 1993. A phytosociological method for interpreting plankton data. *Mar. Ecol. Progr. Ser.* 93: 285-306.
- 3.71 Cattaneo, A., P. Legendre & T. Niyonsenga. 1993. Exploring periphyton unpredictability. *Journal of the North American Benthological Society* 12: 418-430.
- 3.72 Lapointe, F.-J. & P. Legendre. 1994. A classification of pure malt Scotch whiskies. *Applied Statistics* 43: 237-257.
- 3.73 Borcard, D. & P. Legendre. 1994. Environmental control and spatial structure in ecological communities: an example using Oribatid mites (Acari, Oribatei). *Environmental and Ecological Statistics* 1: 37-53.
- 3.74 Legendre, P. & D. Borcard. 1994. Rejoinder. *Environmental and Ecological Statistics* 1: 57-61.
- 3.75 Legendre, P. 1994. Real data are messy. *Statistics and Computing* 3: 197-199.
- 3.76 De Puytorac, P., J. Grain & P. Legendre. 1994. An attempt at reconstructing the phylogenetic tree of Ciliophora using parsimony methods. *European Journal of Protistology* 30: 1-17.
- 3.77 Roy, R., P. Legendre, R. Knowles & M.N. Charlton. 1994. Denitrification and methane production in sediment of Hamilton Harbour (Canada). *Microbial Ecology* 27: 123-141.
- 3.78 Legendre, P., F.-J. Lapointe & P. Casgrain. 1994. Modeling brain evolution from behavior: a permutational regression approach. *Evolution* 48 (5): 1487-1499.
- 3.78 Magnan, P., M. A. Rodríguez, P. Legendre & S. Lacasse. 1994. Dietary variation in a freshwater fish species: relative contribution of biotic interactions, abiotic factors, and spatial structure. *Can. J. Fish. Aquat. Sci.* 51: 2856-2865.
- 3.80 He, F., P. Legendre, C. Bellehumeur & J. V. LaFrankie. 1994. Diversity pattern and spatial scale: a study of a tropical rain forest of Malaysia. *Environmental and Ecological Statistics* 1: 265-286.
- 3.81 Legendre, P. & F.-J. Lapointe. 1995. Matching behavioral evolution to brain morphology. *Brain, Behavior and Evolution* 45: 110-121.
- 3.82 Lapointe, F.-J. & P. Legendre. 1995. Comparison tests for dendrograms: a comparative evaluation. *Journal of Classification* 12: 265-282.
- 3.83 Pinel-Alloul, B., T. Niyonsenga & P. Legendre. 1995. Spatial and environmental components of freshwater zooplankton structure. *Écoscience* 2: 1-19.
- 3.84 Cadoret, L., P. Legendre, M. Adjeroud & R. Galzin. 1995. Répartition spatiale des Chaetodontidae dans différents secteurs récifaux de l'île de Moorea, Polynésie française. *Écoscience* 2: 129-140.
- 3.85 Belgrano, A., P. Legendre, J.-M. Dewarumez & S. Frontier. 1995. Spatial structure and ecological variation of meroplankton on the French-Belgian coast of the North Sea. *Mar. Ecol.*

- Progr. Ser.* 128: 43-50.
- 3.86 Belgrano, A., P. Legendre, J.-M. Dewarumez & S. Frontier. 1995. Spatial structure and ecological variation of meroplankton on the Belgian-Dutch coast of the North Sea. *Mar. Ecol. Progr. Ser.* 128: 51-59.
- 3.87 He, F., P. Legendre & J. V. LaFrankie. 1996. Spatial pattern of diversity in a tropical rain forest of Malaysia. *Journal of Biogeography* 23: 57-74.
- 3.88 Mesplé, F., M. Troussellier, C. Casellas & P. Legendre. 1996. Evaluation of simple statistical criteria to qualify a simulation. *Ecological Modelling* 88: 9-18.
- 3.89 Le Boulengé, É., P. Legendre, C. de le Court, P. Le Boulengé-Nguyen & M. Languy. 1996. Microgeographic morphological differentiation in muskrats. *J. Mammalogy* 77 (3): 684-701.
- 3.90 He, F. & P. Legendre. 1996. On species-area relations. *The American Naturalist* 148: 719-737.
- 3.91 Thomson, J. D., G. Weiblen, B. A. Thomson, S. Alfaro & P. Legendre. 1996. Untangling multiple factors in spatial distributions: lilies, gophers, and rocks. *Ecology* 77: 1698-1715. ["Concepts" paper.]
- 3.92 Casgrain, P., P. Legendre, J.-L. Sixou & C. Mouton. 1996. A graph-theory method to establish serological relationships within a bacterial taxon, with example from *Porphyromonas gingivalis*. *Journal of Microbiological Methods* 26: 225-236.
- 3.93 Morand, S., P. Legendre, S. L. Gardner & J.-P. Hugot. 1996. Body size evolution of oxyurid (Nematoda) parasites: the role of hosts. *Oecologia* 107: 274-282.
- 3.94 Legendre, P., R. Galzin & M. L. Harmelin-Vivien. 1997. Relating behavior to habitat: solutions to the fourth-corner problem. *Ecology* 78(2): 547-562.
- 3.95 He, F., P. Legendre & J. V. LaFrankie. 1997. Distribution patterns of tree species in a Malaysian tropical rain forest. *Journal of Vegetation Science* 8: 105-114.
- 3.96 Dufrière, M. & P. Legendre. 1997. Species assemblages and indicator species: the need for a flexible asymmetrical approach. *Ecological Monographs* 67: 345-366.
- 3.97 Legendre, P. & B.H. McArdle. 1997. Comparison of surfaces. *Oceanologica Acta* 20 (1): 27-41.
- 3.98 Lanctôt, J.-L., P. Legendre & B. Salvat. 1997. How do coral reef Gastropods feel about nuclear testing? A long-term study of the effects of man-made perturbations. *Oceanologica Acta* 20 (1): 243-257.
- 3.99 Gauthier, S., D. Boisclair & P. Legendre. 1997. Evaluation of a variable angle scanning method to estimate relative abundance and distribution of fish using a single-beam echosounder in shallow lakes. *J. Fish Biol.* 50: 208-221.
- 3.100 Bellehumeur, C., P. Legendre & D. Marcotte. 1997. Variance and spatial scales in a tropical rain forest: changing the size of sampling units. *Plant Ecology* 130: 89-98.
- 3.101 Bellehumeur, C. & P. Legendre. 1997. Aggregation of sampling units: an analytical solution to predict variance. *Geographical Analysis* 29: 258-266.
- 3.102 Thrush, S. F., R. D. Pridmore, R. G. Bell, V. J. Cummings, P. K. Dayton, R. Ford, J. Grant, M. O. Green, J. E. Hewitt, A. H. Hines, T. M. Hume, S. M. Lawrie, P. Legendre, B. H. McArdle,

- D. Morrissey, D. C. Schneider, S. J. Turner, R. A. Walters, R. B. Whitlatch & M. R. Wilkinson. 1997. The sandflat habitat: scaling from experiments to conclusions. *J. Exp. Mar. Biol. Ecol.* 216: 1-9.
- 3.103 Grant, J., S. J. Turner, P. Legendre, T. M. Hume & R. G. Bell. 1997. Patterns of sediment reworking and transport over small spatial scales on an intertidal sandflat, Manukau Harbour, New Zealand. *J. Exp. Mar. Biol. Ecol.* 216: 33-50.
- 3.104 Hewitt, J. E., P. Legendre, B. H. McArdle, S. F. Thrush, C. Bellehumeur & S. M. Lawrie. 1997. Identifying relationships between adult and juvenile bivalves at different spatial scales. *J. Exp. Mar. Biol. Ecol.* 216: 77-98.
- 3.105 Legendre, P., S. F. Thrush, V. J. Cummings, P. K. Dayton, J. Grant, J. E. Hewitt, A. H. Hines, B. H. McArdle, R. D. Pridmore, D. C. Schneider, S. J. Turner, R. B. Whitlatch & M. R. Wilkinson. 1997. Spatial structure of bivalves in a sandflat: scale and generating processes. *J. Exp. Mar. Biol. Ecol.* 216: 99-128.
- 3.106 Thrush, S. F., V. J. Cummings, P. K. Dayton, R. Ford, J. Grant, J. E. Hewitt, A. H. Hines, S. M. Lawrie, R. D. Pridmore, P. Legendre, B. H. McArdle, D. C. Schneider, S. J. Turner, R. B. Whitlatch & M. R. Wilkinson. 1997. Matching the outcome of small-scale density manipulation experiments with larger scale patterns: an example of bivalve adult/juvenile interactions. *J. Exp. Mar. Biol. Ecol.* 216: 153-169.
- 3.107 Hines, A. H., R. B. Whitlatch, S. F. Thrush, J. E. Hewitt, V. J. Cummings, P. K. Dayton & P. Legendre. 1997. Nonlinear foraging response of a large marine predator to benthic prey: eagle ray pits and bivalves in a New Zealand sandflat. *J. Exp. Mar. Biol. Ecol.* 216: 191-210.
- 3.108 Thrush, S. F., D. C. Schneider, P. Legendre, R. B. Whitlatch, P. K. Dayton, J. E. Hewitt, A. H. Hines, V. J. Cummings, S. M. Lawrie, J. Grant, R. D. Pridmore, S. J. Turner & B. H. McArdle. 1997. Scaling-up from experiments to complex ecological systems: where to next? *J. Exp. Mar. Biol. Ecol.* 216: 243-254.
- 3.109 Augustin, D., R. Galzin, P. Legendre & B. Salvat. 1997. Variation interannuelle des peuplements récifaux du récif-barrière de Tiahura (île de Moorea, Polynésie française). *Oceanologica Acta* 20: 743-756.
- 3.110 Méot, A., P. Legendre & D. Borcard. 1998. Partialling out the spatial component of ecological variation: questions and propositions in the linear modeling framework. *Environmental and Ecological Statistics* 5 (1): 1-27.
- 3.111 Bellehumeur, C. & P. Legendre. 1998. Multiscale sources of variation in ecological variables: modelling spatial dispersion, elaborating sampling designs. *Landscape Ecology* 13 (1): 15-25.
- 3.112 Tremblay, G., P. Legendre, R. Schetagne & R. Verdon. 1998. The use of polynomial regression analysis with indicator variables for interpretation of mercury in fish data. *Biogeochemistry* 40: 189-201.
- 3.113 Pan, D., A. Bouchard, P. Legendre & G. Domon. 1998. Influence of edaphic factors on the spatial structure of inland halophytic communities: a case study in China. *Journal of Vegetation Science* 9: 797-804.
- 3.114 Legendre, P. & M. J. Anderson. 1999. Distance-based redundancy analysis: testing multispecies responses in multifactorial ecological experiments. *Ecological Monographs* 69 (1): 1-24.

- 3.115 Anderson, M. J. & P. Legendre. 1999. An empirical comparison of permutation methods for tests of partial regression coefficients in a linear model. *Journal of Statistical Computation and Simulation* 62: 271-303.
- 3.116 Pinel-Alloul, B, C. Guay, N. Angeli, P. Legendre, P. Dutilleul, G. Balvay, D. Gerdeaux & J. Guillard. 1999. Large-scale spatial heterogeneity of macrozooplankton in Lake of Geneva. *Canadian Journal of Fisheries and Aquatic Sciences* 56: 1437-1451.
- 3.117 Makarenkov, V. & P. Legendre. 1999. Une méthode d'analyse canonique non-linéaire et son application à des données biologiques. *Mathématiques, informatique et sciences humaines* 147: 135-147.
- 3.118 Lapointe, F.-J., G. Baron and P. Legendre. 1999. Encephalization, adaptation and evolution of Chiroptera: a statistical analysis with further evidence for bat monophyly. *Brain, Behavior and Evolution* 54: 119-126.
- 3.119 Sarrazin, J., S. K. Juniper, G. Massoth & P. Legendre. 1999. Physical and chemical factors influencing hydrothermal species distribution on two sulfide edifices of the Juan de Fuca Ridge, northeast Pacific. *Marine Ecology Progress Series* 190: 89-112.
- 3.120 Bellehumeur, C., D. Marcotte & P. Legendre. 2000. Estimation of regionalized phenomena by geostatistical methods: lake acidity on the Canadian Shield. *Environmental Geology* 39: 211-220.
- 3.121 Dutilleul, P., J. D. Stockwell, D. Frigon & P. Legendre. 2000. The Mantel-Pearson paradox: statistical considerations and ecological implications. *Journal of Agricultural, Biological and Environmental Statistics* 5 (2): 131-150.
- 3.122 Legendre, P. 2000. Comparison of permutation methods for the partial correlation and partial Mantel tests. *Journal of Statistical Computation and Simulation* 67: 37-73.
- 3.123 Avois, C., P. Legendre, S. Masson and B. Pinel-Alloul. 2000. Is the sampling strategy interfering with the study of spatial variability of zooplankton communities? *Canadian Journal of Fisheries and Aquatic Sciences* 57: 1940-1956. ["Perspective" section.]
- 3.124 Guay, J.-C., D. Boisclair, D. Rioux, M. Leclerc, M. Lapointe & P. Legendre. 2000. Development and validation of numerical habitat models for juveniles of Atlantic salmon (*Salmo salar*). *Canadian Journal of Fisheries and Aquatic Sciences* 57: 2065-2075.
- Legendre, P. (Guest Editor) 2000. Special section on reticulate evolution. *Journal of Classification* 17: 153-195.
- 3.125 Legendre, P. 2000. Reticulate evolution: from bacteria to philosopher. *Journal of Classification* 17: 153-157.
- 3.126 Legendre, P. 2000. Biological applications of reticulation analysis. *Journal of Classification* 17: 191-195.
- 3.127 Legendre, P. and E. D. Gallagher. 2001. Ecologically meaningful transformations for ordination of species data. *Oecologia* 129: 271-280.
- 3.128 Makarenkov, V. and P. Legendre. 2001. Optimal variable weighting for ultrametric and additive trees and *K*-means partitioning: methods and software. *Journal of Classification* 18: 245-271.

- 3.129 Guay, J. C., D. Boisclair, M. Leclerc, M. Lapointe and P. Legendre. 2001. Science on the edge of spatial scales: a reply to the comment of Williams (2001). *Canadian Journal of Fisheries and Aquatic Sciences* 58: 2108-2111.
- 3.130 Makarenkov, V. and P. Legendre. 2002. Nonlinear redundancy analysis and canonical correspondence analysis based on polynomial regression. *Ecology* 83(4): 1146-1161.
- 3.131 He, F. and P. Legendre. 2002. Species diversity patterns derived from species-area models. *Ecology* 83(5): 1185-1198. ["Concepts & Synthesis" paper.]
- 3.132 Dalle, S. P., H. López, D. Díaz, P. Legendre and C. Potvin. 2002. Spatial distribution and habitats of useful plants: an initial assessment for conservation on an indigenous territory, Panama. *Biodiversity and Conservation* 11: 637-667.
- 3.133 Borcard, D. and P. Legendre. 2002. All-scale spatial analysis of ecological data by means of principal coordinates of neighbour matrices. *Ecological Modelling* 153: 51-68.
- 3.134 Hooper, E., R. Condit and P. Legendre. 2002. Responses of 20 native tree species to reforestation strategies for abandoned farmland in Panama. *Ecological Applications* 12(6): 1626-1641.
- 3.135 Legendre, P., Y. Desdevises and E. Bazin. 2002. A statistical test for host-parasite coevolution. *Systematic Biology* 51(2): 217-234.
- 3.136 Legendre, P. and V. Makarenkov. 2002. Reconstruction of biogeographic and evolutionary networks using reticulograms. *Systematic Biology* 51(2): 199-216.
- 3.137 Dale, M., P. Dixon, M.-J. Fortin, P. Legendre, D. Myers and M. Rosenberg. 2002. Conceptual and mathematical relationships among methods for spatial analysis. *Ecography* 25: 558-577.
- 3.138 Dungan, J. L., J. N. Perry, M. R. T. Dale, P. Legendre, S. Citron-Pousty, M.-J. Fortin, A. Jakomulska, M. Miriti and M. S. Rosenberg. 2002. A balanced view of scaling in spatial statistical analysis. *Ecography* 25: 626-640.
- 3.139 Legendre, P., M. R. T. Dale, M.-J. Fortin, J. Gurevitch, M. Hohn and D. Myers. 2002. The consequences of spatial structure for the design and analysis of ecological field surveys. *Ecography* 25: 601-615.
- 3.140 Legendre, P., K. E. Ellingsen, E. Bjørnbom and P. Casgrain. 2002. Acoustic seabed classification: improved statistical method. *Canadian Journal of Fisheries and Aquatic Sciences* 59: 1085-1089.
- 3.141 Grillet, M. E., P. Legendre and D. Borcard. 2002. Community structure of neotropical wetland insects in Northern Venezuela. I. Temporal and environmental factors. *Archiv für Hydrobiologie* 155(3): 413-436.
- 3.142 Grillet, M. E., P. Legendre and D. Borcard. 2002. Community structure of neotropical wetland insects in Northern Venezuela. II. Habitat type and environmental factors. *Archiv für Hydrobiologie* 155(3): 437-453.
- 3.143 Hewitt, J. E., S. F. Thrush, P. Legendre, V. J. Cummings and A. Norkko. 2002. Integrating heterogeneity across spatial scales: interactions between *Atrina zelandica* and benthic macrofauna. *Marine Ecology Progress Series* 239: 115-128.

- 3.144 Desdevises, Y., S. Morand, O. Jousson and P. Legendre. 2002. Coevolution between *Lamellodiscus* (Monogenea: Diplectanidae) and Sparidae (Teleostei): the study of a complex host-parasite system. *Evolution* 56(12): 2459-2471.
- 3.145 Desdevises, Y., S. Morand and P. Legendre. 2002. Evolution and determinants of host specificity in the genus *Lamellodiscus* (Monogenea). *Biological Journal of the Linnean Society* 77 (4): 431-443.
- 3.146 Durand, S., M. Le Bel, S. K. Juniper and P. Legendre. 2002. The use of video surveys, a Geographic Information System and sonar backscatter data to study faunal community dynamics at Juan de Fuca Ridge hydrothermal vents. *Cahiers de Biologie Marine* 43: 235-240.
- 3.147 Tarroux, A., R. McNeil and P. Legendre. 2003. Influence of rainfall on the composition of a tropical avian assemblage in northeastern Venezuela. *Ecotropica* 9: 15-31.
- 3.148 Desdevises, Y., P. Legendre, L. Azouzi and S. Morand. 2003. Quantifying phylogenetically-structured environmental variation. *Evolution* 57: 2647-2652.
- 3.149 Legendre, P. 2003. Reply to the comment by Preston and Kirlin on "Acoustic seabed classification: improved statistical method". *Canadian Journal of Fisheries and Aquatic Sciences* 60: 1301-1305.
- 3.150 Makarenkov, V., P. Legendre and Y. Desdevises. 2004. Modelling phylogenetic relationships using reticulated networks. *Zoologica Scripta* 33: 89-96.
- 3.151 Makarenkov, V. and P. Legendre. 2004. From a phylogenetic tree to a reticulated network. *Journal of Computational Biology* 11(1): 195-212.
- 3.152 Lobo A., P. Legendre, J. L. G. Rebollar, J. Carreras and J.-M. Ninot. 2004. Land cover classification at a regional scale in Iberia: separability in a multi-temporal and multi-spectral data set of satellite images. *International Journal of Remote Sensing* 25:205-213.
- 3.153 Legendre, P. and F.-J. Lapointe. 2004. Assessing congruence among distance matrices: single malt Scotch whiskies revisited. *Australian and New Zealand Journal of Statistics* 46: 615-629.
- 3.154 Hewitt, J. E., S. F. Thrush, P. Legendre, G. A. Funnell, and M. Morrison. 2004. Mapping of marine soft-sediment communities: integrated sampling for ecological interpretation. *Ecological Applications* 14(4): 1203-1216.
- 3.155 Borcard, D., P. Legendre, C. Avois-Jacquet and H. Tuomisto. 2004. Dissecting the spatial structure of ecological data at multiple scales. *Ecology* 85: 1826-1832 [Statistical report].
- 3.156 Legendre, P., M. R. T. Dale, M.-J. Fortin, P. Casgrain and J. Gurevitch. 2004. Effects of spatial structures on the results of field experiments. *Ecology* 85: 3202-3214.
- 3.157 Hooper, E. R., P. Legendre and R. Condit. 2004. Factors affecting community composition of forest regeneration in deforested, abandoned land in Panama. *Ecology* 85: 3313-3326.
- 3.158 Bouchon-Navaro, Y., C. Bouchon, M. Louis and P. Legendre. 2005. Biogeographic patterns of coastal fish assemblages in the West Indies. *Journal of Experimental Marine Biology and Ecology* 315: 31-47.
- 3.159 Brind'Amour, A., D. Boisclair, P. Legendre and D. Borcard. 2005. Multiscale spatial distribution of a littoral fish community in relation to environmental variables. *Limnology and*

Oceanography 50: 465-479.

- 3.160 Legendre, P. 2005. Species associations: the Kendall coefficient of concordance revisited. *Journal of Agricultural, Biological, and Environmental Statistics* 10: 226-245.
- 3.161 Legendre, P., D. Borcard and P. R. Peres-Neto. 2005. Analyzing beta diversity: partitioning the spatial variation of community composition data. *Ecological Monographs* 75: 435-450. ["Concepts & Synthesis" paper.]
- 3.162 Hooper, E., P. Legendre and R. Condit. 2005. Barriers to forest regeneration of deforested and abandoned land in Panama. *Journal of Applied Ecology* 42: 1165-1174.
- 3.163 Núñez-Lara, E., J. E. Arias-González and P. Legendre. 2005. Spatial patterns of Yucatan reef fish communities: testing models using a multi-scale survey design. *J. Exp. Mar. Biol. Ecol.* 324: 157-169.
- 3.164 Durand, S., P. Legendre and S. K. Juniper. 2006. Sonar backscatter differentiation of dominant macrohabitat types in a hydrothermal vent field. *Ecological Applications* 16: 1421-1435.
- 3.165 Clua, E., P. Legendre, L. Vigliola, F. Magron, M. Kulbicki, S. Sarramegna, P. Labrosse and R. Galzin. 2006. Medium-scale approach (MSA) for improved assessment of coral reef fish habitat. *Journal of Experimental Marine Biology and Ecology* 333: 219-230.
- 3.166 Passy, S. I. and P. Legendre. 2006. Power law relationships among hierarchical taxonomic categories in algae reveal a new paradox of the plankton. *Global Ecology and Biogeography* 15: 528-535.
- 3.167 Dray, S., P. Legendre and P. R. Peres-Neto. 2006. Spatial modelling: a comprehensive framework for principal coordinate analysis of neighbour matrices (PCNM). *Ecological Modelling* 196: 483-493.
- 3.168 Passy, S. I. and P. Legendre. 2006. Are algal communities driven toward maximum biomass? *Proceedings of the Royal Society B: Biological Sciences* 273: 2667-2674.
- 3.169 Tall, L., A. Cattaneo, L. Cloutier, S. Dray and P. Legendre. 2006. Resource partitioning in a grazer guild feeding on a multilayer diatom mat. *Journal of the North American Benthological Society* 25: 800-810.
- 3.170 Peres-Neto, P. R., P. Legendre, S. Dray and D. Borcard. 2006. Variation partitioning of species data matrices: estimation and comparison of fractions. *Ecology* 87: 2614-2625.
- 3.171 Sarrazin, J., P.M. Sarradin and the MoMARETO cruise participants: A.G. Allais, D. Almeida, S. Bernagout, R. Bettencourt, E. Bonnard, V. Brandou, P. Briand, M. Bruneaux, E. Buffier, J.B. Burnet, N. Byrne, F. Cardigos, E. Coiras, R.P. Cosson, D. Cottin, D. Cuvelier, S. Dentrecolas, D. Desbruyères, P. Dorval, J. Dupont, M.C. Fabri, P. Gavaia, A. Godfroy, M. Gouillou, J. Gronemann, G. Hamel, M. Hamon, D. Higuët, U. Hoge, D. Jollivet, C. Le Gall, P. Legendre, D. Leroux, F. Lesongeur, J. Legrand, P. Léon, J.P. Lévêque, I. Martins, H. Ondreas, V. Riou, P. Rodier, E. Sauter, E. Savino, L. Sebastião, B. Shillito, P. Siméoni, A. Schultz, J.M. Siquin, J.P. Sudreau, A. Tanguy, P. Taylor, R. Vuillemin, C. Waldmann, F. Zal. 2006. MoMARETO: a cruise dedicated to the spatio-temporal dynamics and the adaptations of hydrothermal vent fauna on the Mid-Atlantic Ridge. *InterRidge News* 15: 24-33.
- 3.172 Legendre, P. 2007. Studying beta diversity: ecological variation partitioning by multiple

- regression and canonical analysis. *Journal of Plant Ecology* (Chinese version), [formerly *Acta Phytocologica Sinica*] 31: 976-981.
- 3.173 Lacey, R. W. J., P. Legendre and A. Roy. 2007. Spatial-scale partitioning of *in situ* turbulent flow data over a pebble cluster in a gravel-bed river. *Water Resources Research* 43, W03416, doi:10.1029/2006WR005044.
- 3.174 Houlihan, J. E., D. J. Currie, K. Cottenie, G. S. Cumming, S. K. M. Ernest, C. S. Findlay, S. D. Fuhlendorf, U. Gaedke, P. Legendre, J. J. Magnuson, B. H. McArdle, E. H. Muldavin, D. Noble, R. Russell, R. D. Stevens, T. J. Willis, I. P. Woiwod, and S. M. Wondzell. 2007. Compensatory dynamics are rare in natural ecological communities. *Proceedings of the National Academy of Science* (USA) 104: 3273-3277.
- 3.175 Michel, N., F. Burel, P. Legendre and A. Butet. 2007. Role of habitat and landscape in structuring small mammal assemblages in hedgerow networks of contrasted farming landscapes in Brittany, France. *Landscape Ecology* 22 : 1241-1253.
- 3.176 Caraguel, C. G. B., C. J. O'Kelly, P. Legendre, S. Frasca Jr., R. J. Gast, B. M. Després, R. J. Cawthorn and S. J. Greenwood. 2007. Microheterogeneity and coevolution: an examination of rDNA sequence characteristics in *Neoparamoeba pemaquidensis* and its prokinetoplastid endosymbiont. *Journal of Eukaryotic Microbiology* 54 : 418-426.
- 3.177 Paquette, A., E. Laliberté, A. Bouchard, S. de Blois, P. Legendre and J. Brisson. 2007. Lac Croche understory vegetation data set (1998-2006). *Ecology* 88: 3209. ["Data paper"]
- 3.178 Léonard, R., P. Legendre, M. Jean and A. Bouchard. 2008. Spatial patterns of submerged macrophyte communities in a fluvio-lacustrine section of the St. Lawrence River: a landscape ecology perspective. *Landscape Ecology* 23 : 91-105.
- 3.179 Legendre, P. 2008. Studying beta diversity: ecological variation partitioning by multiple regression and canonical analysis. *Journal of Plant Ecology* (English version) 1: 3-8. [Published by Oxford University Press on behalf of the Institute of Botany, Chinese Academy of Science.]
- 3.180 Cubo, J., P. Legendre, A. de Ricqlès, L. Montes, E. de Margerie, J. Castanet, and Y. Desdevises. 2008. Phylogenetic, functional, and structural components of variation in bone growth rate of amniotes. *Evolution & Development* 10: 217-227.
- 3.181 De Caceres, M., and P. Legendre. 2008. Beals smoothing revisited. *Oecologia* 156: 657-669.
- 3.182 Blanchet, F. G., P. Legendre, and D. Borcard. 2008. Modelling directional spatial processes in ecological data. *Ecological Modelling* 215: 325-336. Blanchet, F. G., P. Legendre, and D. Borcard. 2009. Erratum to "Modelling directional spatial processes in ecological data" [*Ecological Modelling* 215 (2008): 325-336]. *Ecological Modelling* 220: 82-83.
- 3.183 Jones, M. M., H. Tuomisto, D. Borcard, P. Legendre, D. B. Clark and P. C. Olivas. 2008. Explaining variation in tropical plant community composition: influence of environmental and spatial data quality. *Oecologia* 155: 593-604.
- 3.184 Rhainds, M., J. Brodeur, D. Borcard, and P. Legendre. 2008. Toward management guidelines for soybean aphid, *Aphis glycine*, in Québec. II. Spatial distribution of aphid populations in commercial soybean fields. *Canadian Entomologist* 140: 219-234.
- 3.185 Blanchet F. G., P. Legendre, and D. Borcard. 2008. Forward selection of explanatory variables.

Ecology 89: 2623-2632.

- 3.186 Clua, E. and P. Legendre. 2008. Shifting dominance among Scarid species on reefs representing a gradient of fishing pressure. *Aquatic Living Resources* 21: 339-348.
- 3.187 Legendre, P., D. Borcard, and P. R. Peres-Neto. 2008. Analyzing or explaining beta diversity: Comment. *Ecology* 8: 3238-3244.
- 3.188 Dray, S. and P. Legendre. 2008. Testing the species traits-environment relationships: the fourth-corner problem revisited. *Ecology* 89: 3400-3412.
- 3.189 Arias-González, J. E., P. Legendre, and F. A. Rodríguez-Zaragoza. 2008. Scaling up beta diversity on Caribbean coral reefs. *Journal of Experimental Marine Biology and Ecology* 366: 28-36.
- 3.190 Escobar-Briones, E. G., C. Diaz, and P. Legendre. 2008. Meiofaunal community structure of the deep-sea Gulf of Mexico: variability due to sorting methods. *Deep-Sea Research II: Topical Studies in Oceanography* 55: 2627-2633.
- 3.191 Escobar-Briones, E. G., A. Gaytán-Caballero, and P. Legendre. 2008. Epibenthic megacrustaceans from the continental margin, slope and abyssal plain of the Southwestern Gulf of Mexico: factors responsible for variability in species composition and diversity. *Deep-Sea Research II: Topical Studies in Oceanography* 55: 2667-2678.
- 3.192 Escobar-Briones, E., E. L. Estrada Santillán, and P. Legendre. 2008. Macrofaunal density and biomass in the Campeche Canyon, Southern Gulf of Mexico. *Deep Sea Research II: Topical Studies in Oceanography* 55: 2679-2686 .
- 3.193 Houlihan, J. E., K. Cottenie, G. S. Cumming, D. J. Currie, C. S. Findlay, U. Gaedke, P. Legendre, J. J. Magnuson, B. H. McArdle, R. D. Stevens, I. P. Woiod, and S. M. Wondzell. 2008. The utility of covariances: a response to Ranta et al. *Oikos* 117: 1912-1913.
- 3.194 Laliberté, E., A. Paquette, P. Legendre, and A. Bouchard. 2009. Assessing the scale-specific importance of niches and other spatial processes on beta diversity: a case study from a temperate forest. *Oecologia* 159: 377-388.
- 3.195 Legendre, P., X. Mi, H. Ren, K. Ma, M. Yu, I. F. Sun, and F. He. 2009. Partitioning beta diversity in a subtropical broad-leaved forest of China. *Ecology* 90: 663-674.
- 3.196 Aubin, I., M.-H. Ouellette, P. Legendre, C. Messier and A. Bouchard. 2009. Comparison of two plant functional approaches to evaluate natural restoration along an old-field – deciduous forest chronosequence. *Journal of Vegetation Science* 20: 185-198.
- 3.197 Campbell, V., P. Legendre and F.-J. Lapointe. 2009. Assessing congruence among ultrametric distance matrices. *Journal of Classification* 26: 103-117.
- 3.198 Bachraty, C., P. Legendre and D. Desbruyères. 2009. Biogeographic relationships among deep-sea hydrothermal vent faunas at global scale. *Deep-Sea Research I* 56(8): 1371-1378.
- 3.199 Monti, D. and P. Legendre. 2009. Shifts between biotic and physical driving forces of species organization under natural disturbance regimes. *Canadian Journal of Fisheries and Aquatic Sciences* 66 (8): 1282-1293.
- 3.200 Legendre, P. and Y. Desdevises. 2009. Independent contrasts and regression through the origin.

Journal of Theoretical Biology 259: 727-743.

- 3.201 Boutet, I., A. Tanguy, D. Le Guen, P. Piccino, S. Hourdez, P. Legendre, and D. Jollivet. 2009. Global depression in gene expression as a response to rapid thermal changes in vent mussels. *Proceedings of the Royal Society B* 276 : 3071-3079.
- 3.202 De Cáceres, M., and P. Legendre. 2009. Associations between species and groups of sites: indices and statistical inference. *Ecology* 90: 3566-3574.
- 3.203 Roy, M. L., A. G. Roy, and P. Legendre. 2010. The relations between 'standard' fluvial habitat variables and turbulent flow at multiple scales in morphological units of a gravel-bed river. *River Research and Applications* 26: 439-455.
- 3.204 Legendre, P., M. De Cáceres, and D. Borcard. 2010. Community surveys through space and time: testing the space-time interaction in the absence of replication. *Ecology* 91(1): 262-272.
- 3.205 Laliberté, E., and P. Legendre. 2010. A distance-based framework for measuring functional diversity from multiple traits. *Ecology* 91(1): 299-305.
- 3.206 Peres-Neto, P. R. and P. Legendre. 2010. Estimating and controlling for spatial structure in the study of ecological communities. *Global Ecology and Biogeography* 19: 174-184.
- 3.207 Moretti, M., M. De Cáceres, C. Pradella, M. K. Obrist, B. Wermelinger, P. Legendre and P. Duelli. 2010. Fire-induced taxonomic and functional changes in saproxylic beetle communities in fire sensitive regions. *Ecography* 33: 760-771.
- 3.208 Legendre, P. and M.-J. Fortin. 2010. Comparison of the Mantel test and alternative approaches for detecting complex multivariate relationships in the spatial analysis of genetic data. *Molecular Ecology Resources* 10: 831-844.
- 3.209 Epperson, B. K., B. H. McRae, K. Scribner, S. A. Cushman, M. S. Rosenberg, M.-J. Fortin, P. M. A. James, M. Murphy, S. Manel, P. Legendre, and M. R. T. Dale. 2010. Utility of computer simulations in landscape genetics. *Molecular Ecology* 19: 3549-3564.
- 3.210 Manel, S., B. N. Poncet, P. Legendre, F. Gugerli and R. Holderegger. 2010. Common factors drive adaptive genetic variation at different spatial scales in *Arabis alpina*. *Molecular Ecology* 19: 3824-3835.
- 3.211 Guénard, G., P. Legendre, D. Boisclair, and M. Bilodeau. 2010. Assessment of scale-dependent correlations between variables. *Ecology* 91: 2952-2964.
- 3.212 Noorduijn, S. L., A. Ghadouani, R. Vogwill, K. R. J. Smettem, and P. Legendre. 2010. Water table response to an experimental alley farming trial: dissecting the spatial and temporal structure of the data. *Ecological Applications* 20: 1704-1720.
- 3.213 Makarenkov, V., J. Xie, A. Boc, P. Peres-Neto, F.-J. Lapointe and P. Legendre. 2010. Weighted bootstrapping: a correction method for assessing the robustness of phylogenetic trees. *BMC Evolutionary Biology* 10: 250. doi:10.1186/1471-2148-10-250.
- 3.214 De Cáceres, M., P. Legendre and M. Moretti. 2010. Improving indicator species analysis by combining groups of sites. *Oikos* 119: 1674-1684.
- 3.215 Clua, E., N. Buray, P. Legendre, J. Mourier and S. Planes. 2010. Behavioural response of sicklefin lemon sharks *Negaprion acutidens* to underwater feeding for ecotourism purposes.

Marine Ecology Progress Series 414: 257-266.

- 3.216 Ali, G., A. Roy and P. Legendre. 2010. Spatial relationships between soil moisture patterns and topographic variables at multiple scales in a humid temperate forested catchment. *Water Resources Research* 46, W10526, doi:10.1029/2009WR008804.
- 3.217 Sattler, T., D. Borcard, R. Arlettaz, F. Bontadina, P. Legendre, M. Obrist, and M. Moretti. 2010. Spider, bee and bird communities in cities are shaped by environmental control and high stochasticity. *Ecology* 91: 3343-3353.
- 3.218 Clua, E., N. Buray, P. Legendre, J. Mourier and S. Planes. 2010. Effects of provisioning on shark behaviour: Reply to Brunnschweiler & McKenzie (2010). *Marine Ecology Progress Series* 420: 285-288.
- 3.219 Declerck, S. A. J., J. S. Coronel, P. Legendre and L. Brendonck. 2011. Scale dependency of processes structuring metacommunities of cladocerans in temporary pools of High-Andes wetlands. *Ecography* 34: 296-305.
- 3.220 Campbell, V., P. Legendre, and F.-J. Lapointe. 2011. The performance of the Congruence Among Distance Matrices (CADM) test in phylogenetic analysis. *BMC Evolutionary Biology* 11: 64. doi:10.1186/1471-2148-11-64. <http://www.biomedcentral.com/1471-2148/11/64>.
- 3.221 Brind'Amour, A., D. Boisclair, S. Dray and P. Legendre. 2011. Relationships between species feeding traits and environmental conditions in fish communities: a three-matrix approach. *Ecological Applications* 21: 363-377.
- 3.222 Matabos M., S. Plouviez, S. Hourdez, D. Desbruyère, P. Legendre, A. Warén, D. Jollivet, and E. Thiébaud. 2011. Faunal changes and geographic crypticism indicate the occurrence of a biogeographic transition zone along the southern East Pacific Rise. *Journal of Biogeography* 38: 575-594.
- 3.223 Coat, S., D. Monti, P. Legendre, C. Bouchon, F. Massat and G. Lepoint. 2011. Organochlorine pollution in tropical rivers (Guadeloupe): role of ecological factors in food web bioaccumulation. *Environmental Pollution* 159: 1692-1701.
- 3.224 Blanchet, F. G., P. Legendre, R. Maranger, D. Monti and P. Pepin. 2011. Modelling the effect of directional spatial ecological processes at different scales. *Oecologia* 166: 357-368.
- 3.225 Legendre, P., J. Oksanen and C. J. F. ter Braak. 2011. Testing the significance of canonical axes in redundancy analysis. *Methods in Ecology and Evolution* 2: 269-277.
- 3.226 Clua, E., N. Buray, P. Legendre, J. Mourier and S. Planes. 2011. Business partner or simple catch? The economic value of the sicklefin lemon shark in French Polynesia. *Marine and Freshwater Research* 62: 764-770. (Special issue of MFR for the proceedings of the Sharks International Conference, Cairns, Australia, June 6-11, 2010).
- 3.227 Bellchambers, L. M., J. J. Meeuwig, S. N. Evans, and P. Legendre. 2011. Modelling habitat associations of the common spider conch in the Cocos (Keeling) Islands. *Marine Ecology Progress Series* 432: 83-90.
- 3.228 De Cáceres, M., D. Sol, O. Lapiedra and P. Legendre. 2011. A framework for estimating niche metrics using the resemblance between qualitative resources. *Oikos* 120: 1341-1350.
- 3.229 Sharma, S., P. Legendre, M. De Cáceres and D. Boisclair. 2011. The role of environmental and

- spatial processes in structuring native and non-native fish communities across thousands of lakes. *Ecography* 34: 762-771. DOI: 10.1111/j.1600-0587.2010.06811.x
- 3.230 Smokorowski, K. E., N. Bergeron, D. Boisclair, K. Clarke, S. Cooke, R. Cunjak, J. Dawson, B. Eaton, F. Hicks, P. Higgins, C. Katopodis, M. Lapointe, P. Legendre, M. Power, R. Randall, J. Rasmussen, G. Rose, A. Saint-Hilaire, B. Sellars, G. Swanson, N. Winfield, R. Wysocki and D. Zhu. 2011. NSERC's HydroNet: A national research network to promote sustainable hydropower and healthy aquatic ecosystems. *Fisheries* 36: 480-488. [Journal published by the *American Fisheries Society*, <http://www.fisheries.org/>.]
- 3.231 Ding, Q., Y. Liang, P. Legendre, X. He, K. Pei, X. Du and K. Ma. 2011. Availability of ectomycorrhizal fungi propagules in a degraded landscape after five-decade absence of host plants. *Mycorrhiza* 21: 669-680.
- 3.232 Guénard, G., P. C. von der Ohe, D. de Zwart, P. Legendre and S. Lek. 2011. Using phylogenetic information to predict species tolerances to toxic chemicals. *Ecological Applications* 21: 3178-3190.
- 3.233 Bellchambers, L. M., J. J. Meeuwig, S. N. Evans, and P. Legendre. 2011. Modelling habitat associations of 14 species of holoturians from an unfished coral atoll: implications for fisheries management. *Aquatic Biology* 14: 57-66.
- 3.234 Kopp, D., Y. Bouchon-Navaro, M. Louis, P. Legendre and C. Bouchon. 2012. Spatial and temporal variation in a Caribbean herbivorous fish assemblage. *Journal of Coastal Research* 28: 63-72.
- 3.235 Ouellette, M.-H., P. Legendre and D. Borcard. 2012. Cascade multivariate regression tree: a novel approach for modelling nested explanatory sets. *Methods in Ecology & Evolution* 3: 234-244.
- 3.236 Legendre, P., D. Borcard and D. W. Roberts. 2012. Variation partitioning involving orthogonal spatial eigenfunction submodels. *Ecology* 93: 1234-1240.
- 3.237 De Cáceres, M., P. Legendre, R. Valencia, M. Cao, L.-W. Chang, G. Chuyong, R. Condit, Z. Hao, C.-F. Hsieh, S. Hubbell, D. Kenfack, K. Ma, X. Mi, N. Supardi Noor, A. R. Kassim, H. Ren, S.-H. Su, I.-F. Sun, D. Thomas, W. Ye and F. He. 2012. The variation of tree beta diversity across a global network of forest plots. *Global Ecology and Biogeography* (Article first published online : 15 MAY 2012, DOI: 10.1111/j.1466-8238.2012.00770.x).
- 3.238 Borcard, D. and P. Legendre. 2012. Is the Mantel correlogram powerful enough to be useful in ecological analysis? A simulation study. *Ecology* 93: 1473-1481.
- 3.239 Beltrán, C. M. C., F. García-Oliva, P. Legendre and L. I. Falcón. 2012. N₂ fixation rates and associated diversity (*nifH*) of microbialite and mat-forming consortia from different aquatic environments in Mexico. *Aquatic Microbial Ecology* 67: 15-24.
- 3.240 Dray, S., R. Péliissier, P. Couteron, M.-J. Fortin, P. Legendre, P. R. Peres-Neto, E. Bellier, R. Bivand, F. G. Blanchet, M. De Cáceres, A.-B. Dufour, E. Heegaard, T. Jombart, F. Munoz, J. Oksanen, J. Thioulouse and H. H. Wagner. 2012. Community ecology in the age of multivariate multiscale spatial analysis. *Ecological Monographs* 82: 257-275.
- 3.241 Manel, S., F. Gugerli, W. Thuiller, N. Alvarez, P. Legendre, R. Holderegger, L. Gielly and P. Taberlet. 2012. Broad-scale adaptive genetic variation in Alpine plants is mainly driven by

- temperature and precipitation. *Molecular Ecology* 21: 3729-3738.
- 3.242 Lacoursière-Roussel, A., D. G. Bock, M. E. Cristescu, F. Guichard, P. Girard, P. Legendre and C. W. McKindsey. 2012. Disentangling invasion processes in a dynamic shipping-boating network. *Molecular Ecology* 21: 4227-4241.
- 3.243 Walker, S., G. Guénard and P. Legendre. 2012. Multiple-table data in R with the multitable package. *Journal of Statistical Software* 51: 1-38.
- 3.244 De Cáceres, M., P. Legendre, S. Wisser and L. Brotons. 2012. Using species combinations in indicator value analyses. *Methods in Ecology and Evolution* 3: 973-982.
- 3.245 Bertolo, A., G. F. Blanchet, P. Magnan, P. Brodeur, M. Mingelbier, and P. Legendre. 2012. Inferring processes from spatial patterns: the role of directional and non-directional forces in shaping fish larvae distribution in a freshwater lake system. *PLoS ONE* 7(11): e50239. doi:10.1371.
- 3.246 Sharma, S., P. Legendre, D. Boisclair and S. Gauthier. 2012. Effects of spatial scale and choice of statistical model (linear versus tree-based) on determining species-habitat relationships. *Canadian Journal of Fisheries and Aquatic Sciences* 69: 2095-2111.
- 3.247 Centeno, C. M., P. Legendre, Y. Beltrán, R. J. Alcántara-Hernández, U. E. Lidström, M. N. Ashby, and L. I. Falcón. 2012. Microbialite genetic diversity and composition relate to environmental variables. *FEMS Microbiology Ecology* 82: 724-735.
- 3.248 Mines, C., A. Ghadouani, N. D. Yan, P. Legendre and G. N. Ivey. 2013. Examining shifts in zooplankton community variability following biological invasion. *Limnology & Oceanography* 58(1): 399-408.
- 3.249 Terrier, A., M. Girardin, C. Périé, P. Legendre and Y. Bergeron. 2013. Potential changes in forest composition could reduce impacts of climate change on boreal wildfires. *Ecological Applications* 23: 21-35.
- 3.250 Genard, B., B. Marie, E. Loumaye, B. Knoop, P. Legendre, F. Zal and J.-F. Rees. 2013. Living in a hot redox soup: antioxidant defences of the hydrothermal worm, *Alvinella pompejana*. *Aquatic Biology* 18: 217-228.
- 3.251 Pinel-Alloul, B., A. André, P. Legendre, J. Cardille, K. Patalas and A. Salki. 2013. Large-scale geographic patterns of diversity and community structure of pelagic crustacean zooplankton in Canadian lakes. *Global Ecology and Biogeography* 22: 784-795.
- 3.252 Sork, V. L., S. N. Aitken, R. J. Dyer, A. J. Eckert, P. Legendre and D. B. Neale. 2013. Putting the landscape into the genomics of forest trees: Approaches for understanding local adaptation and population responses to a changing climate. *Tree Genetics & Genomes* 9: 901-911.
- 3.253 Legendre, P. and M. De Cáceres. 2013. Beta diversity as the variance of community data: dissimilarity coefficients and partitioning. *Ecology Letters* 16: 951-963.
- 3.254 Lanthier, G., D. Boisclair, G. Bourque, P. Legendre, M. Lapointe, and B. Angers. 2013. Optimization of temporal versus spatial replication in the development of habitat use models to explain among-reach variations of fish density estimates in rivers. *Canadian Journal of Fisheries and Aquatic Sciences* 70: 600-609.
- 3.255 Rogic, A., N. Tessier, P. Legendre, F.-J. Lapointe and V. Millien. 2013. Genetic structure of the

- white-footed mouse in the context of the emergence of Lyme disease in southern Québec. *Ecology and Evolution* (First published online: 3 June 2013 | DOI: 10.1002/ece3.620).
- 3.256 Guénard, G., P. Legendre and P. R. Peres-Neto. 2013. Phylogenetic eigenvector maps: a framework to model and predict species traits. *Methods in Ecology and Evolution* 4: 1120-1131. (Article first published online: 23 Oct 2013, doi: 10.1111/2041-210X.12111).
- 3.257 De Cáceres, M., P. Legendre and F. He. 2013. Dissimilarity measurements and the size structure of ecological communities. *Methods in Ecology and Evolution* 4: 1167-1177. (Article first published online : 18 NOV 2013, DOI: 10.1111/2041-210X.12116).
- 3.258 Legendre, P. and O. Gauthier. 2014. Statistical methods for temporal and space-time analysis of community composition data. *Proceedings of the Royal Society B – Biological Sciences (Proc. R. Soc. B)* 281: 20132728.
- 3.259 Tremblay, R., R. Pienitz and P. Legendre. 2014. Reconstructing phosphorus levels using models based on the modern diatom assemblages of 55 lakes in southern Quebec. *Canadian Journal of Fisheries and Aquatic Sciences* 71: 887-914. dx.doi.org/10.1139/cjfas-2013-0469
- 3.260 Cuvelier, D., P. Legendre, A. Laes, P.-M. Sarradin and J. Sarrazin. 2014. Rhythms and community dynamics of a hydrothermal tubeworm assemblage at Main Endeavour Field – A multidisciplinary deep-sea observatory approach. *PLoS ONE* 9(5): e96924. doi:10.1371/journal.pone.0096924.
- 3.261 Guénard, G., P. C. von der Ohe, S. C. Walker, S. Lek and P. Legendre. 2014. Using phylogenetic information and chemical properties to predict species tolerances to pesticides. *Proc. R. Soc. B* 281: 20133239.
- 3.262 Sarrazin, J., D. Cuvelier, L. Peton, P. Legendre and P. M. Sarradin. 2014. High-resolution dynamics of a deep-sea hydrothermal mussel assemblage monitored by the EMSO-Açores MoMAR observatory. *Deep-Sea Research I* 90: 62-75.
- 3.263 Blanchet, F. G., P. Legendre, J. A. C. Bergeron and F. He. 2014. Consensus RDA across dissimilarity coefficients for canonical ordination of community composition data. *Ecological Monographs* 84: 491-511.
- 3.264 Voisin, G., G. Bouvet, P. Legendre, A. Dagenais, C. Massé and Y. Berthiaume. 2014. Oxidative stress modulates the expression of genes involved in cell survival in $\Delta F508$ cystic fibrosis airway epithelial cells. *Physiological Genomics* 46: 634-646.
- 3.265 Legendre, P. 2014. Interpreting the replacement and richness difference components of beta diversity. *Global Ecology and Biogeography* 23: 1324-1334. doi: 10.1111/geb.12207
- 3.266 Murtagh, F. and P. Legendre. 2014. Ward's hierarchical agglomerative clustering method: which algorithms implement Ward's criterion? *Journal of Classification* 31: 274-295. doi: 10.1007/s00357-014-9161-z
- 3.267 Macnaughton, C., S. Harvey-Lavoie, C. Senay, G. Lanthier, G. Bourque, P. Legendre and D. Boisclair. 2014. A comparison of electrofishing and visual surveying methods for estimating fish community structure in temperate rivers. *River Research and Applications* 30: xxx-xxx. Published online, June 9, 2014 (wileyonlinelibrary.com) DOI: 10.1002/tra.2787
- 3.268 Winegardner, A. K., B. E. Beisner, P. Legendre and I. Gregory-Eaves. 2015. Are the landscape-level drivers of water column and surface sediment diatoms different? *Freshwater Biology* 60 :

- 267-281. doi: 10.1111/fwb.12478 (First published online, October 16, 2014).
- 3.269 Guénard, G., D. Boisclair and P. Legendre. 2015. Phylogenetics to help predict active metabolism. *Ecosphere* 6: art62. (Published, April 15, 2015.)
- 3.270 Charles-Dominique, T., C. Edelin, A. Bouchard, P. Legendre and J. Brisson. 2015. Using intra-individual variation of shrub architecture to explain population cover. *Oikos* (accepted September 4, 2014).
- 3.271 Gaudreau, J., L. Perez et P. Legendre. 2015. Identification des variables expliquant la distribution spatiale d'oiseaux de la forêt boréale et modélisation de tendances futures : une approche multivariée. *Cybergeo : Revue européenne de géographie / European Journal of Geography* (accepté le 1er avril 2015).
- 3.272 Sarrazin, J., P. Legendre, F. De Busserolles, M.-C. Fabri, K. Guilini, V. N. Ivanenko, M. Morineaux, A. Vanreusel & P.-M. Sarradin. 2015. Biodiversity patterns, environmental drivers and indicator species on a high temperature hydrothermal edifice, Mid-Atlantic Ridge. *Deep-Sea Research II* (accepted, April 17, 2015).
- 3.273 Legendre, P. and B. Salvat. 2015. Thirty-year recovery of mollusc communities after nuclear experimentations on Fangataufa atoll (Tuamotu, French Polynesia). *Proc. R. Soc. B* (in press).

International working groups

- Mai 1975 – Working group on numerical ecology at Station marine de Villefranche-sur-Mer, Université Pierre et Marie Curie (Paris VI), France. Foundation of *Numerical ecology* as a new subfield of ecology.
- *The ecology of soft-bottom habitats: Matching spatial patterns with dynamic processes*. National Institute of Water and Atmospheric Research (NIWA), Hamilton, New Zealand, January-March 1994.
- Mai 1997 – Participant in the 8th ecological surveillance mission in Fangataufa Atoll, French Polynesia, following the French atmospheric nuclear tests carried out by *Direction des Centres d'Expérimentations Nucléaires* in the 1960's.
- *SCALE EXPERT Workshop (Spatial Comparisons Across Large Estuaries: EXPerimental Evaluation of Recent Technologies)*, Centre for Research on Ecological Impacts of Coastal Cities, University of Sydney, Sydney, Australia, 2-22 August 1999.
- *Integrating the Statistical Modeling of Spatial Data in Ecology*. Working Group, National Center for Ecological Analysis and Synthesis (NCEAS), Santa Barbara, California. First meeting: 17-23 July 1999. Second meeting: 20-24 February 2000. Third meeting: 26 June - 1st July 2000.
- *Effects on macrobenthic fauna due to oil activities, analysed by different multivariate methods*. Åpent Seminar: Overvåking I Nordsjøen. Det Norske Veritas, Høvik, Norway, 4-6 februar 2000.
- *Diagnostic écologique des écosystèmes et des ressources marines côtières de la République d'Haïti*. France-Haïti-Québec working group financed by AUPELF. Field work, May 7–21, 2000. Results presented during a seminar in Port-au-Prince, July 11–12, 2001.
- *Spatial and temporal community dynamics*. Working Group, National Center for Ecological Analysis

and Synthesis (NCEAS), Santa Barbara, California. First meeting: 16-20 February 2004. Second meeting: 28 August - 3 September 2004. Third meeting: 23-27 May 2005.

- *European oceanographic expedition*. Participant in the **Momareto** deep-sea research cruise on hydrothermal vents of the Mid-Atlantic Ridge, August 17 – September 6, 2006, on board the *Pourquoi Pas ?* oceanographic vessel of **Ifremer**. In charge of the abyssal sampling design and data analysis.
- *6^{ème} groupe de travail IMROP sur l'évaluation des ressources et l'aménagement des pêcheries*. Conference organised by *Institut mauritanien de recherches océanographiques et des pêches* (IMROP), Nouadhibou, Mauritania, December 11 – 16, 2006. Invited expert, member of the Scientific Committee, and Rapporteur of the Environment Commission.
- *Diagnostic écologique des écosystèmes et des ressources marines côtières de la République d'Haïti: 2e volet*. Groupe de travail France-Haïti-Québec financé par l'AUF. Travaux de terrain du 5 au 15 avril 2007.
- *FADA, the next step: exploring possible ways to analyse data* – Freshwater Animal Diversity Assessment (FADA) workshop in Bruges, Belgium, December 5-7, 2008.
- *An interdisciplinary approach to advancing landscape genetics*. Working Group, National Center for Ecological Analysis and Synthesis (NCEAS), Santa Barbara, California. First meeting: 18-22 March 2009. Third meeting, 19-23 July 2010. Fourth meeting, 19-22 February 2011.
- *Landscape Genomics Workshop*, Trento, Italie, 23-24 août 2010. Support Action 'FoResTTraC' (Forest ecosystem genomics research), European Economic Community.
- *Community Phylogenetics Workshop*, Université du Québec à Montréal (UQAM), Montréal, October 11-14, 2011, under the auspices of the Québec Centre for Biodiversity Science (QCBS).
- *Developing a Roadmap for the Future of Landscape Genomics*, National Evolutionary Synthesis Center (NESCent), Durham, North Carolina, March 7-9, 2013.

Short courses given in universities and scientific institutes

1. Mai 1975 — 5 heures dans le cadre du “Séminaire de mathématiques appliquées à l’océanographie biologique”, Station marine de Villefranche-sur-Mer, Université Pierre et Marie Curie (Paris VI), France. (Fondation de l’écologie numérique.)
2. Février 1980 — “Analyse des données écologiques”. Mini-cours (9 heures) pour le DEA d’océanographie biologique, Station marine de Villefranche-sur-Mer, Université Pierre et Marie Curie (Paris VI), France.
3. Mai 1980 — Écologie numérique. Cours donné aux élèves-ingénieurs en Sciences et Techniques de l’Eau, Université de Montpellier II, France. 15 heures de cours plus travaux pratiques sur ordinateur.
4. Juillet 1986 — “Workshop on spatial analysis methods”: 6 heures de cours, 17-18 juillet, Laboratorio de Ecologia del Benthos, Stazione Zoologica di Napoli, Ischia, Italie.
5. Avril 1987 — Série de cours intitulée "L'analyse spatiale en écologie" (7 jours, du 21 au 30 avril), Unité d'Écologie et de Biogéographie, Université catholique de Louvain, Louvain-la-Neuve, Belgique.
6. Avril-mai 1988 — Série de cours intitulée "Méthodes d'analyse des structures écologiques" (7 jours, du 20 au 28 avril), Département de Biologie, Université catholique de Louvain, Louvain-la-Neuve, Belgique.
7. Mai 1988 — “Statistique sur micro-ordinateur — Formation d’appoint pour scientifiques” (19-20 mai): cours offert aux membres de l’Association des biologistes du Québec, sous les auspices de la Faculté de l’éducation permanente de l’Université de Montréal.
8. Octobre 1989 — Série de cours intitulée BIOL 3899 "Écologie spatiale" (15 heures, du 9 au 18 octobre), Département de Biologie, Université catholique de Louvain, Louvain-la-Neuve, Belgique.
9. 21 juin 1990 — “An introduction to classification and clustering”. Short course, Classification Society of North America Annual Meeting (CSNA-90), Utah State University, Logan, Utah. Enseignants: R.C. Dubes, P. Legendre et G.W. Milligan.
10. Février 1991 — Cours intensif d’analyse quantitative de données écologiques (14 heures, du 4 au 15 février), Département de sciences biologiques, Université de Montréal.
11. Janvier 1992 — “Statistique sur micro-ordinateur — Formation d’appoint pour scientifiques” (25-26 janvier): cours offert aux membres de l’Association des biologistes du Québec, CEGEP François-Xavier-Garneau, Québec.
12. 11 juin 1992 — “An introduction to classification and clustering: A short course for CSNA-92”. Classification Society of North America Annual Meeting, Michigan State University, East Lansing, Michigan. Enseignants: R.C. Dubes, P. Legendre et G.W. Milligan.

13. 15-21 Juin 1992 — “Analysis of spatial data in ecology and biogeography”. Nordisk Kollegium för Ekologi (NKE) & Nordiska forskarutbildningsakademien (NorFA). Cours à l’intention des étudiants gradués des pays scandinaves, Høyfjellsøkologisk forskningsstasjon (Universities of Bergen and Oslo Research Station), Finse, Norvège. Enseignants: Pierre Legendre (Montréal), Mark Hill (Monks Wood, Great Britain), Daniel Borcard (Neuchâtel, Suisse) et John Birks (Bergen, Norvège).
14. 13-17 avril 1993 — “Analyse des structures spatiales en écologie”. Institut de Zoologie, Université de Neuchâtel, Neuchâtel, Suisse. Enseignants: Daniel Borcard, Pierre Legendre (Montréal), Alexandre Buttler et Willy Matthey.
15. 24 juin 1993 — “An introduction to classification and clustering: A short course for CSNA-93”. Classification Society of North America Annual Meeting, University of Pittsburgh, Pittsburgh, Pennsylvania. Enseignants: P. Legendre, Stephen C. Hirtle et G.W. Milligan.
16. 14-17 novembre 1994 — “Spatial analysis in ecology”. Cursos d’Especialització i Postgrau, Departament d’Ecologia, Universitat de Barcelona, Espagne. [10 heures].
17. 8 décembre 1994 — “Analyse spatiale en écologie”. Participation à l’enseignement du DEA d’Océanographie de l’Université Paris VI, Station zoologique de Villefranche-sur-Mer, France. [7 heures].
18. 22 juin 1995 — “An introduction to classification and clustering: A short course for CSNA-95”. Classification Society of North America Annual Meeting, University of Colorado, Executive Tower Inn, Denver, Colorado. Enseignants: P. Legendre, Stephen C. Hirtle et G.W. Milligan.
19. 13 juin 1996 — “An introduction to classification and clustering: A short course for CSNA-96”. Classification Society of North America Annual Meeting, Campus Center Hotel, University of Massachusetts, Amherst, MA, USA. Enseignants: P. Legendre, Stephen C. Hirtle et G.W. Milligan.
20. 8-12 juillet 1996 — “Spatial analysis” — 10 heures de cours et séances quotidiennes de travaux pratiques dans le cadre du programmes d’études avancées européen "Numerical Analysis in Marine Ecology" (NAME) de la CEE. Cours donné à l’Observatoire océanologique, Université Paris VI, Villefranche-sur-Mer, France, 3 - 20 juillet 1996.
21. 21-27 octobre 96 — “Scale dependency of ecological patterns and processes” — 7 heures de cours et 5 heures de travaux pratiques dans le cadre d’un cours *NorFA* (*Nordiska forskarutbildningsakademien*) à l’intention des étudiants gradués des pays scandinaves. Cours donné au Tovetorp Laboratory, University of Stockholm, Suède.
22. 12 juin 1997 — “An introduction to classification and clustering: A short course for CSNA-97”. Classification Society of North America Annual Meeting, The American University, Washington, DC, USA. Enseignants: P. Legendre, Stephen C. Hirtle et G.W. Milligan.
23. 17 juin 1998 — “An introduction to classification and clustering: A short course for CSNA-98”. Joint Annual Meeting of the Psychometric Society and the Classification Society of North

America, Levis Faculty Center, University of Illinois, Urbana, Illinois. Enseignants: P. Legendre, Stephen C. Hirtle et G.W. Milligan.

24. 3-5 mai 1999 — “Spatial analysis of ecological data”. 15 heures de cours et 9 heures de travaux pratiques. Biology Department, University of Massachusetts, Boston, Mass., USA.
25. 10 juin 1999 — “An introduction to classification and clustering. A short course for CSNA-99”. Annual Meeting of the Classification Society of North America, University of Pittsburgh, Pittsburgh, Pennsylvania. Enseignants: P. Legendre, Stephen C. Hirtle et G.W. Milligan.
26. 8 juin 2000 — “An introduction to classification and clustering. A short course for CSNA-2000”. Annual Meeting of the Classification Society of North America, Université de Montréal, Montréal, Québec. Enseignants: P. Legendre, Stephen C. Hirtle et G.W. Milligan.
27. Novembre-décembre 2000 — “Mini-cours GRIL d’analyse canonique”. Cours d’une journée donnés par Pierre Legendre et Vladimir Makarenkov à l’Université de Montréal les 15 et 21 novembre 2000, à l’UQAM le 23 novembre 2000 et à McGill le 15 décembre 2000.
28. 4-8 décembre 2000 — Volet “Statistique multidimensionnelle” dans le cadre du DESS (Diplôme d’Études Supérieures en Sciences) à l’Université des Antilles et de la Guyane, Pointe-à-Pitre, Guadeloupe. 20 heures de cours et 9 heures de travaux dirigés.
29. 10-14 décembre 2001 — Module MTC5 “Biostatistique et analyse des données” dans le cadre du DEA *Environnement tropical et valorisation de la biodiversité* à l’Université des Antilles et de la Guyane, Pointe-à-Pitre, Guadeloupe. 20 heures de cours.
30. Mai-juin 2002 — 4 demi-journées de cours à l’intention des doctorants de l’Institut de Recherche pour le Développement (IRD), Nouméa, Nouvelle-Calédonie.
31. 16-20 décembre 2002 — Module MTC5 “Analyse de données spatiales et temporelles”, dans le cadre du DEA *Environnement tropical et valorisation de la biodiversité* et du DESS, à l’Université des Antilles et de la Guyane, Pointe-à-Pitre, Guadeloupe. 15 heures de cours magistraux, 4 heures de travaux dirigés (DEA) et 2 heures de démonstrations de programmes (DESS).
32. 3-7 mars 2003 — “Short course: Numerical ecology” (*Curso análisis cuantitativos de datos biológicos*), Instituto de Ciencias del Mar y Limnología, Universidad Nacional Autónoma de México (UNAM), México.
33. 13-17 octobre 2003 — Module TC5 “Analyse de données”, dans le cadre du DEA *Environnement tropical et valorisation de la biodiversité* à l’Université des Antilles et de la Guyane, Pointe-à-Pitre, Guadeloupe. 14 heures de cours magistraux et 4 heures de travaux dirigés.
34. 8-12 décembre 2003 — Short course on “Multivariate analysis of spatial and temporal ecological data” (28 hours). Departamento de Recursos del Mar, Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional (CINVESTAV, Unidad Mérida), Mexico.

35. 10-11 mai 2004 — Mini-cours interactif: “Méthodes statistiques pour étudier les liens faune-environnement”. DRO Environnement profond, Direction des recherches océaniques, IFREMER, Plouzané (Brest), France.
36. 11-15 octobre 2004 — Module TC5 “Analyse de données”, dans le cadre du DEA *Environnement tropical et valorisation de la biodiversité* à l’Université des Antilles et de la Guyane, Pointe-à-Pitre, Guadeloupe. 15 heures de cours magistraux et 4 heures de travaux dirigés.
37. 16-17 décembre 2004 — “Séminaire sur l’hétérogénéité spatiale”, UMR 6553 ÉCOBIO, Université de Rennes 1, France, 16-17 décembre 2004. 10 heures de cours magistraux et 4 heures de travaux pratiques.
38. 6-10 juin 2005 — Cours intitulé “Biostatistique et écologie numérique” à l’Institut français de recherche pour l’exploitation de la mer (IFREMER), Plouzané (Brest), France. 25 heures de cours et de travaux pratiques.
39. 7 août 2005 — “Introduction to advanced statistical methods for ecologists” pendant le ESA-INTECOL 2005 Joint Meeting, Palais des Congrès, Montréal. Sunday, August 7, 8:00 AM – 11 :30 PM, Meeting Room 510d, Level 5, Palais des Congrès de Montréal.
40. 24-28 octobre 2005 — Module TC5 “Analyse de données”, dans le cadre du DEA *Environnement tropical et valorisation de la biodiversité* à l’Université des Antilles et de la Guyane, Pointe-à-Pitre, Guadeloupe. 15 heures de cours magistraux et 4 heures de travaux dirigés.
41. 24 avril - 4 mai 2006 — (1) 24-26 avril : Cours intitulé “Biostatistique et écologie numérique”, niveau débutant ; 21 heures de cours et de travaux pratiques. (2) 27 avril au 3 mai : atelier sur l’utilisation des analyses multivariées dans la recherche en milieu marin, niveau avancé (28 heures). (3) 4 mai : atelier sur la programmation en langage R (7 heures). Institut français de recherche pour l’exploitation de la mer (IFREMER), Brest, France. Ces cours ont été donnés dans les locaux de l’Université de Bretagne occidentale à Brest.
Page Web pour ce cours : <http://biol09.biol.umontreal.ca/Brest06>.
42. 1er - 5 juin 2006 — *Advanced spatial ecology*. Short course, Research Center of Plant Ecology and Biodiversity Conservation, Institute of Botany, Chinese Academy of Sciences, Beijing, China. WWWeb page: <http://biol09.biol.umontreal.ca/Beijing06>.
43. 26-31 juillet 2007 — *Advanced spatial ecology*. Workshop on quantitative ecology, Center for Tropical Ecology and Biodiversity, Tunghai University, Taichung, Taiwan (venue : Fushan Botanical Garden, Ilan) (36 students). Web pages for this course: <http://eco.biodiv.tw/>, <http://biol09.biol.umontreal.ca/Taiwan07>.
44. 15 août 2007 — *Recent advances in spatial analysis: theory and practice*. One-day short course given by Pierre Legendre (Université de Montréal) and Pedro Peres-Neto (Université du Québec à Montréal) during SIL 2007, the 30th Congress of the International Society of Limnology, Montréal. 22 students.

45. December 10-14, 2007 — *Recent advances in spatial ecology: theory and practice*. Pacific Islands Fisheries Science Center, National Oceanic and Atmospheric Administration (NOAA), Honolulu, Hawaii, USA (34 students). Web page for this course: <http://biol09.biol.umontreal.ca/Hawaii07>.
46. January 7-11, 2008 — “Curso de análisis cuantitativo de datos biológicos – A course on quantitative analysis of biological data”, Posgrado en Ciencias del Mar y Limnología, Universidad Nacional Autónoma de México (UNAM), México (15 students). Web page for this course: <http://biol09.biol.umontreal.ca/Mexico08>.
47. February 18-22, 2008 — *Recent advances in spatial ecology: theory and practice*. School of Environmental Systems Engineering and Institute of Advanced Studies, University of Western Australia, Perth, Australia (60 students). Web page for this course: <http://biol09.biol.umontreal.ca/Perth08>.
48. March 4, 2008 — *Introduction to R*, for the Chinese students of the School of Environmental Systems Engineering, University of Western Australia, Perth, Australia (7 students).
49. 19-23 mai 2008 — *Nouvelles méthodes en écologie spatiale*. Station Biologique de Roscoff, Université Paris VI, France (30 étudiants).
Page Web pour ce cours : <http://biol09.biol.umontreal.ca/Roscoff08>.
50. 30 juin-4 juillet 2008 — *Nouvelles méthodes en écologie spatiale*. Institut français de recherche pour l’exploitation de la mer (IFREMER), Nantes, France (12 étudiants). Page Web pour ce cours : <http://biol09.biol.umontreal.ca/Nantes08>.
51. June 8-12, 2009 — Master Class on *Recent advances in spatial analysis of multivariate environmental data: theory and practice*. School of Environmental Systems Engineering, School of Plant Biology and the Graduate Research School, The University of Western Australia, Perth, Australia; 93 participants. Web page for this course: <http://biol09.biol.umontreal.ca/Perth09>.
52. July 6-10, 2009 — *Recent advances in spatial ecology: theory and practice*. CSIRO Marine & Atmospheric Research Division, Cleveland, Queensland, Australia; 19 participants. Web page for the course: <http://biol09.biol.umontreal.ca/Cleveland09>.
53. August 10-14, 2009 — *Recent advances in spatial ecology: theory and practice*. CSIRO Marine & Atmospheric Research Division, Hobart, Tasmania, Australia; 16 participants. Web page for this course: <http://biol09.biol.umontreal.ca/Hobart09>.
54. September 10-15, 2009 — *Linear model*. Sponsors: Biodiversity Committee, Chinese Academy of Science (BC-CAS), Institute of Botany, Chinese Academy of Science (IB-CAS), and Chinese Forest Biodiversity Monitoring Network. Course given at the Institute of Botany, Beijing; 40 participants. Web page for this course: http://biol09.biol.umontreal.ca/Beijing_Linear_model/.
55. October 1-6, 2009 — *Recent advances in spatial ecology: theory and practice*. Sponsors: Biodiversity Committee, Chinese Academy of Science (BC-CAS), Institute of Botany, Chinese Academy of Science (IB-CAS), and Chinese Forest Biodiversity Monitoring Network. Course

- given at the Institute of Botany, Beijing; 40 participants. Web page for this course: <http://biol09.biol.umontreal.ca/Beijing09>.
56. November 6-8 and 13-15, 2009 — *Biostatistics short course. Part 1: Linear model. Part 2: Community ecology ordination*. Department of Life Science / Center for Tropical Ecology and Biodiversity, Tunghai University, Taichung, Taiwan (20 participants). Web page for this course: <http://biol09.biol.umontreal.ca/Taiwan09>.
 57. May 6, 2010 — *Ecological data analysis: Spatial analysis of beta diversity in multi-species communities*. Université d'été en science de la biodiversité, Centre de la science de la biodiversité du Québec (CSBQ), 3-14 mai 2010 / Biodiversity Science Summer Course, May 3-14, 2010. Québec Centre for Biodiversity Science (QCBS), McGill University Gault Nature Reserve, Mont Saint-Hilaire, Québec. Web page for this course: <http://biol09.biol.umontreal.ca/QCBS10/>.
 58. 27-29 octobre 2010 — Module *Régression et analyse canonique*. Master d'Écologie Tropicale (ECOTROP), UFR des Sciences Exactes et Naturelles, Université des Antilles et de la Guyane, Pointe-à-Pitre, Guadeloupe. 6 heures de cours magistraux et 2 heures de travaux pratiques (20 étudiants). Page Web pour ce cours : http://biol09.biol.umontreal.ca/UAG_10/.
 59. Le 5 mai 2011 — *Analyse des données écologiques : Analyse spatiale de la diversité bêta dans les communautés*. École d'été en science de la biodiversité, Centre de la science de la biodiversité du Québec (CSBQ) et Centre sur la biodiversité, Université de Montréal. Dans le cadre du cours Bio 6012 – Science de la biodiversité, Université de Montréal. Station de biologie des Laurentides (SBL), Saint-Hippolyte, Québec, 2-13 mai 2011 (14 étudiants). Page Web pour ce cours : <http://biol09.biol.umontreal.ca/CSBQ11/>.
 60. October 24-28, 2011 — *Recent Advances in Spatial Analysis of Multivariate Environmental Data: Theory and Practice*. Instituto de Ecología, Universidad Nacional Autónoma de México (UNAM), México (34 students). Web page for that course: <http://biol09.biol.umontreal.ca/Mexico11/>.
 61. September 17, 2012 — *Temporal eigenfunction methods for multiscale analysis of community composition and other multivariate data*. Plenary Course 2 + Applied Course AC2 in: Time-series analysis in marine science and applications for industry, a *Europôle Mer* Gordon-like conference, Moulin-Mer, Lagonna-Daoulas, Brittany, France. Septembre 17, 2012 (60 students). Web page for that course: www.europolemer.eu/en/time-series-analysis.php.
 62. 22-26 octobre 2012 — *Analyse spatiale des communautés*. 15 heures de cours dans le cadre du cours *Analyse des données biologiques* (LBOE2112 / SBOEM112), 1^o année de maîtrise en Biologie des organismes et Écologie, Université catholique de Louvain et Facultés universitaires Notre-Dame de la Paix de Namur, Belgique (54 étudiants). Page Web pour ce cours : <http://biol09.biol.umontreal.ca/LLNoct12/>.
 63. November 3, 2012 — *Ecological data analysis: Spatial analysis of beta diversity in multi-species communities*. Université d'été en science de la biodiversité, Centre de la science de la biodiversité du Québec (CSBQ), 29 octobre au 9 novembre 2012 / Biodiversity Science Summer Course, October 29 to November 9, 2012 (17 students). McGill Biol 645 course. Québec Centre for Biodiversity Science (QCBS), McGill University Gault Nature Reserve, Mont Saint-Hilaire,

Québec.

64. May 23-27, 2013 — Recent advances in spatial analysis of multivariate ecological data: Theory and practice. College of Environmental Studies, National Dong Hwa University, Hualien, Taiwan (25 students).
65. November 30, 2013 — *Ecological data analysis: Spatial analysis of beta diversity in multi-species communities*. Cours intensif en science de la biodiversité du CSBQ, Centre de la science de la biodiversité du Québec (CSBQ), 25 novembre au 6 décembre 2013 / QCSB Biodiversity Science Intensive Course, November 25 to December 6, 2013 (25 students). McGill Biol 645 course. Québec Centre for Biodiversity Science (QCBS), McGill University Gault Nature Reserve, Mont Saint-Hilaire, Québec.

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