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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*. Moved to *Département de sciences biologiques*, Université de Montréal, in 1980 (Associate Professor). Full Professor in 1984.

Honors

- 1986 – *Michel-Jurdant* prize for Environment Sciences, Association canadienne-française pour l'Avancement des Sciences (ACFAS).
- 1989-1991 – Killam Research Fellow, Canada Council.
- 1992 – Elected *Fellow of the Royal Society of Canada* (Academy of Science).
- 1994 – Recipient of the *Distinguished Statistical Ecologist Award* of the *International Congress of Ecology (INTECOL)*.
- 1995 – Recipient of the Romanowski Medal (environmental science) of the Royal Society of Canada.
- 1999 – Recipient 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 in Ecology/Environment*, Institute for Scientific Information, USA (<http://isihighlycited.com/>).
- 2005 – Recipient 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 – Recipient of Université de Montréal *Excellence in Teaching Award*, *Full Professor* category.
- 2011 – Recipient of the *Excellence in Teaching Award* of the Faculty of Arts and Science, Université de Montréal, *Science Sector* category.
- 2012 – Recipient of the Canadian Council of University Biology Chairs *Career Achievement Award*.
- 2013 – Recipient of the Canadian Society for Ecology and Evolution *President's Award*.

Scientific production

- 9 books on numerical ecology;
- 13 contributions to other books (chapters);
- 250 papers published or in press in refereed journals;
- 22 refereed conference proceedings;
- 1 English-French vocabulary of numerical ecology and statistics
- 240 papers presented at scientific conferences;
- 303 research seminars;
- 62 short courses given in 40 universities and scientific institutes around the world;
- 13 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.

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>>

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 Makarevich, 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. *Encyclopedia of Biodiversity, 2nd edition*. Simon Levin [ed.] Elsevier Science B. V., Amsterdam (in press).

3. Papers 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.
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- 3.74 Legendre, P. & D. Borcard. 1994. Rejoinder. *Environmental and Ecological Statistics* 1: 57-61.

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- 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. Adjerdoud & 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.
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 - 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.
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 - 3.245 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.
 - 3.246 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* (published online, November 2012).
 - 3.247 Centeno, C. M., P. Legendre, Y. Beltrán, R. J. Alcántara-Hernández, U. E. Lidström, M. N. Ashby, and L. I. Falcón. 2012. Patterns in microbialite genetic composition relate to

environmental variables. *FEMS Microbiology Ecology* (Accepted for publication).

- 3.248 Terrier, A., M. Girardin, C. Périé, P. Legendre and Y. Bergeron. 2012. Potential changes in forest composition could reduce impacts of climate change on boreal wildfires. *Ecological Applications* (Accepted for publication).
- 3.249 Mines, C., A. Ghadouani, N. D. Yan, P. Legendre and G. N. Ivey. 2012. Examining shifts in zooplankton community variability following biological invasion. *Limnology & Oceanography* (Accepted for publication).
- 3.250 Pinel-Alloul, B., A. André, P. Legendre, J. Cardille, K. Patalas and A. Salki. 2012. Large-scale geographic patterns of diversity and community structure of pelagic crustacean zooplankton in Canadian lakes. *Global Ecology and Biogeography* (Accepted for publication).

4. International working groups

- *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.
- *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*. Groupe de travail France-Haïti-Québec financé par l'AUPELF. Travaux de terrain du 7 au 21 mai 2000. Compte-rendu des résultats lors d'un séminaire à Port-au-Prince les 11 et 12 juillet 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** (Ifremer, France) 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).

Short courses given in universities and scientific institutes around the world

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. 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.
4. 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.
5. 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.
6. 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.
7. 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.
8. 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.
9. Février 1991 — Cours intensif d’analyse quantitative de données écologiques (14 heures, du 4 au 15 février), Département de sciences biologiques, Université de Montréal.
10. 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.
11. 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.
12. 15-21 Juin 1992 — “Analysis of spatial data in ecology and biogeography”. Nordisk Kollegium för Ekologi (NKE) & Nordiska forskarutbildningsakademin (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).

13. 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.
14. 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.
15. 14-17 novembre 1994 — “Spatial analysis in ecology”. Cursos d’Especialització i Postgrau, Departament d’Ecologia, Universitat de Barcelona, Espagne. [10 heures].
16. 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].
17. 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.
18. 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.
19. 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.
20. 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 forskarutbildningsakademin)* à l’intention des étudiants gradués des pays scandinaves. Cours donné au Tovetorp Laboratory, University of Stockholm, Suède.
21. 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.
22. 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.
23. 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.

24. 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.
25. 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.
26. Novembre-décembre 2000 — “Mini-cours GRIL d’analyse canonique”. Cours d’une journée donné 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.
27. 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.
28. 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.
29. 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.
30. 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).
31. 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.
32. 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.
33. 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.
34. 10-11 mai 2004 — Mini-cours interactif: “Méthodes statistiques pour étudier les liens faune-environnement”. DRO Environnement profond, Direction des recherches océaniques, IFREMER, Brest, France.
35. 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.

36. 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.
37. 6-10 juin 2005 — Cours intitulé “Biostatistique et écologie numérique” à l'Institut français de recherche pour l'exploitation de la mer (IFREMER), Brest, France. 25 heures de cours et de travaux pratiques.
38. 7 août 2005 — “Introduction to advanced statistical methods for ecologists” during the 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.
39. 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.
40. 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>.
41. 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. WWW page: <http://biol09.biol.umontreal.ca/Beijing06>.
42. 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>.
43. 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.
44. 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>.
45. 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>.

46. 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>.
47. 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).
48. 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>.
49. 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>.
50. 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>.
51. 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>.
52. 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>.
53. 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/.
54. 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>.
55. 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>.

56. 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/>.
57. 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/.
58. 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/>.
59. 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/>.
60. 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.
61. 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/>.
62. 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.

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