

# Pierre Legendre

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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.
- 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.



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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.
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- 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<sup>ème</sup> 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).