# Curriculum vitae
# Mark Alun Lewis FRSC

**Address:**      Department of Mathematical and Statistical Sciences, University of Alberta
e-mail: mark.lewis@ualberta.ca

**Degrees:**      *University of Oxford,* D.Phil. in Mathematics (Mathematical Biology), Nov 1990.
*University of Victoria, Canada,* B.Sc., Double Major in Biology and Combined
Mathematics/Computer Science, May 1987, First Class.

**Positions:**

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|---|---|
| 7/01–now | *Professor and Senior Canada Research Chair in Mathematical Biology*<br>Department of Mathematical and Statistical Sciences and Department of Biological Sciences, University of Alberta. |
| 1/02-now | *Director, Centre for Mathematical Biology*<br>University of Alberta |
| 7/12-6/14 | *Killam Research Fellow*<br>University of Alberta |
| 9/11-12/11 | *Research Fellow*<br>Oxford Centre for Collaborative Applied Mathematics |
| 10/11-12/11 | *Visiting Fellow*<br>Saint Catherine's College, Oxford |
| 7/00–2/02 | *Professor*<br>Department of Mathematics, University of Utah. |
| 7/95–7/00 | *Associate Professor*<br>Department of Mathematics, University of Utah. |
| 5/95–6/02 | *Adjunct Faculty*<br>Department of Biology, University of Utah. |
| 7/93–now | *Affiliate Faculty*<br>Department of Applied Mathematics, University of Washington, Seattle. |
| 4/99–7/99 | *Senior Visitor*<br>Institute for Industrial and Applied Mathematics, University of Minnesota. |
| 9/98–12/98 | *Research Fellow*<br>Centre for Population Biology at Silwood Park, Imperial College, University of London. |
| 95 winter | *Visiting Fellow*<br>Department of Ecology and Evolution, Princeton University (Sloan Research Fellow). |
| 8/92-6/95 | *Assistant Professor*<br>Department of Mathematics, University of Utah. |
| 1/91–7/92 | *Research Associate*<br>Mathematical Biology, jointly with the departments of Applied Mathematics and Zoology, University of Washington, working with Professors J.D. Murray and P. Kareiva, and supported by an NSERC of Canada Postdoctoral Fellowship Award. |

**Publications (**216 total, Google Scholar 12,684 citations, H-index=55 (student, postdoc and research associate names are in **bold**).

**Journal Publications:**

1.  **Goodsman, D.W.,** Cooke, B.J., Lewis, M.A. (2017) Positive and negative density-dependence and boom-bust dynamics in enemy-victim populations: A mountain pine beetle case study, In Press at *Theoretical Ecology*.
2.  **Marculis, N.G**., Lui, R., Lewis, M.A. (2016) Neutral genetic patterns for expanding populations with nonoverlapping generations, In Press at *Bulletin of Mathematical Biology*.
3.  Hernandez, M., Johansson, M.L., **Xiao, Y.**, Lewis, M.A., MacIsaac, H.J. (2016) Modeling sampling strategies for determination of zooplankton abundance in ballast water *Marine Pollution Bulletin* DOI:10.1016/j.marpolbul.2016.11.050 (epub).
4.  Fazly, M., Wang, H., Lewis, M.A. (2016) On impulsive reaction-diffusion models in higher dimensions, In Press at *SIAM J. Applied Math*.
5.  **Peacock, S.J**., Krkošek, M., Lewis, M.A., Lele, S. (2016) Study design and parameter estimability for spatial and temporal ecological models, In Press at *Ecology and Evolution*.
6.  **Garnier, J**., Lewis, M.A. (2016) Population expansion under climate change: the genetic consequences *Bulletin of Mathematical Biology* 78(11): 2165-2185
7.  **Bouhours, J**., Lewis, M.A. Climate change and integrodifference equations in a stochastic environment *Bulletin of Mathematical Biology*, 78(9): 1866-1903
8.  Krivan, V., Lewis, M.A., Bentz, B.J., Bewick, S., Lenhart, S.M., Liebhold, A. (2106) A dynamical model for bark beetle outbreaks. *Journal of Theoretical Biology* 407(21): 25-37
9.  Mesgaran, M.B., Lewis, M.A., Ades, P.K, Donohue, K., Ohadi, S., Li, C., Cousens, R.D., Hybridization can facilitate species invasions, even without enhancing local adaptation *Proceedings of the National Academy of Sciences* 113(36): 10210-10214
10.  **Goodsman, D.W**., **Koch**, **D**., Whitehouse, C., Evenden, M., Cooke, B., Lewis, M.A. (2016) Aggregation and a strong Allee effect in a cooperative outbreak insect. *Ecological Applications* 26(8): 2623-2636
11.  Lewis, M. A. (2016). Finding the sweet spot for invasion theory. *Proceedings of the National Academy of Sciences*, 113(25): 6819-6820
12.  **Auger-Méthé, M**., Field, C., Albertsen, C.M., Derocher, A.E., Lewis, M.A., Jonsen, I.D., Mills Flemming, J. (2016) State-space models' dirty little secrets: even simple linear Gaussian models can have parameter and state estimation problems. *Scientific Reports* 6: 26677
13.  **Schlägel, U.E.**, Lewis, M.A. (2016) Robustness of movement models: can models bridge the gap between temporal scales of data sets and behavioural processes? *Journal of Mathematical Biology* 73(6) DOI 10.1007/s00285-016-1005-5 (epub)
14.  **Potts, J.R**, Lewis, M.A. (2016) How memory of direct animal interactions can lead to territorial patterns formation. *Journal of the Royal Society Interface* 13(118) DOI: 10.1098/rsif.2016.0059 (epub)
15.  **Goodsman, D.W**., Lewis, M.A. (2016) The minimum founding population in dispersing organisms subject to strong Allee effects. *Methods in Ecology and Evolution* 7(9): 1100-1109
16.  Hamelin, F., Castella, F., Doli, V., Marcais, B, Ravigne, V., Lewis, M.A. (2016) Mate finding, sexual spore production, and the spread of fungal plant pathogens. *Bulletin of Mathematical Biology* 78(4): 695-712

17. **Auger-Méthé, M.,** Derocher, A., DeMars, C., Plank, M., Codling, E., Lewis, M.A. (2016) Evaluating random search strategies in three mammals from distinct feeding guilds *Journal of Animal Ecology* 85(5): 1411-1421

18. **Potapov, A**., Merrill, E., Pybus, M. Lewis, M.A. (2016) Chronic wasting disease: Transmission mechanisms and the possibility of harvest management. *PLOS ONE* (11)3: e0151039

19. **Peacock. S.J**., **Bateman, A.W**, Krkošek, M, Lewis, M.A. (2016) The dynamics of coupled populations subject to control. *Theoretical Ecology*. 9(3): 365-380

20. **Huang, Q.**, Wang. H.W., Ricciardi, A. Lewis, M.A. (2016) Temperature- and turbidity-dependent competitive interactions between invasive freshwater mussels. *Bulletin of Mathematical Biology* 778(3): 353-380

21. **Schlägel, U.E.**, Lewis, M.A. (2016) A framework for analyzing movement models' robustness against varying temporal discretization. *Journal of Mathematical Biology* 73(4): 815-845

22. **Avgar, T.**, Potts, J.R., Lewis, M.A, Boyce, M.S. (2016) Integrated step selection analysis: Bridging the gap between resource selection and animal movement. *Methods in Ecology and Evolution*. 7(5): 619-630

23. **Huang, Q.**, Jin, Y., Lewis, M.A. (2016) $R_0$ analysis of a benthic-drift model for a stream population. *SIAM Journal on Applied Dynamical Systems* 15(1): 287-321.

24. Groner, M.L., Rogers, L.A, **Bateman, A.W**., Connors, B.M, Frazer, L.N., Godwin, S.C., Krkošek, M., Lewis, M.A., **Peacock, S.J**., Rees, E.E., Revie, C.W., **Schlägel, U.E**. Conservation, fisheries and aquaculture: Quantitative lessons from sea lice and salmon epidemiology (2016). *Philosophical Transactions of the Royal Society B: Biological Sciences* 371: 20150203. DOI: 10.1098/rstb.2015.0203

25. **Potts, J.R.**, Hillen T., Lewis, M.A. (2015) The "edge effect" phenomenon: deriving population abundance patterns from individual animal movement decisions *Theoretical Ecology* 9(2): 233-247

26. **Potapov, A.**, Merrill, E., Pybus, M., Lewis, M.A. (2015) Empirical estimation of $R_0$ for unknown transmission functions: The case of chronic wasting disease in Alberta. *PLoS One* 10(10):e0140024.

27. **Vasilyeva, O**., Lutscher, F., Lewis, M.A. (2016) Analysis of spread and persistence for stream insects with winged adult stages. *Journal of Mathematical Biology* 72(4): 851-875

28. **Peacock, S.J.,** Krkošek, M., **Bateman, A.W.,** Lewis, M.A. (2015) Parasitism and food web dynamics of juvenile Pacific salmon. *Ecosphere* 6(12): 1-16.

29. Gagnon, K., **Peacock, S.**, Jin, Y., Lewis, M.A. (2015) Modelling the spread of the invasive alga *Codium fragile* drive by long-distance dispersal of buoyant propagules. *Ecological Modelling* 316(c): 111-121

30. **Huang, Q.**, Wang, H. Lewis, M.A. (2015) The impact of environmental toxins on predator-prey dynamics. *Journal of Theoretical Biology* 378: 12-30

31. **Auger-Méthé, M**., Derocher, A., Plank, M., Codling, E., Lewis, M.A. (2015) Differentiating the Lévy walk from the composite correlated random walk. *Methods in Ecology and Evolution*. 6(10): 1179-1189

32. **Auger-Méthé, M**., Lewis, M.A., Derocher, A.E. (2015) Home ranges in moving habitats: polar bears and sea ice. *Ecography*. 39(1): 26-35

33. **Potts, J.R.,** Lewis, M.A. (2015) Territorial pattern formation in the absence of an attractive potential. *Journal of Mathematical Biology*. 72(1): 25-46

34. **Bateman, A.W**., Neubert, M.G., Krkošek, M., Lewis, M.A. (2015) Generational spreading

speed and the dynamics of ecological invasions. *American Naturalist*. 186(3): 362-375

35. Paolucci, E.M., Hernandez, M.C**., Potapov, A**., Lewis, M.A., MacIsaac, H.J. (2015) Hybrid treatment increases efficiency of ballast water management. *Journal of Applied Ecology.* 52(2): 348-357.

36. Bastille-Rousseau, G., **Potts, J.R.,** Lewis, M.A., Ellington, E.H., Rayl, N.D., Mahoney, S.P., Fuller, T.K., Organ J.F., Schaefer, J.A., Murray, D.L. (2015) Unveiling trade-offs in resource selection of migratory caribou using a mechanistic movement model of availability. *Ecography* 38(10): 1049-1059

37. **Huang, Q.**, Lewis, M.A. (2015) Homing fidelity and reproductive rate for migratory populations. *Theoretical Ecology* 8(2): 187-205

38. **Schlägel, U**., Lewis, M.A. (2014) Detecting effects of spatial memory and dynamic information on animal movement decisions *Methods in Ecology and Evolution* 5(11): 1236-1246.

39. Drolet, D., Locke, A., Lewis, M.A., Davidson, J. (2015) Evidence-based tool surpasses expert opinion in predicting probability of eradication of aquatic non-indigenous species. *Ecological Applications* 25(2): 441-450.

40. **Potts, J.R**., Mokross, K., Stouffer, P.C., Lewis, M.A. (2014) Step selection techniques uncover the environmental predictors of space use patterns in flocks of Amazonian birds. *Ecology and Evolution* 4(24): 4578-4588

41. **Goodsman, D**., Cooke, B., Coltman, D.W., Lewis, M.A. (2014) The genetic signature of rapid range expansions: dispersal, growth and invasion speed *Theoretical Population Biology* 98: 1-10.

42. **Potts, J.R.**, **Auger- Méthé, M**., Lewis, M.A. (2014) A generalized residual technique for analyzing complex movement models using the earth mover's distance. *Methods in Ecology and Evolution* 5(10): 1012-1022.

43. **Bateman, A.W**., Lewis, M.A., Gall, G., Manser, M.B., Clutton-Brock, T.H. (2014) Territoriality and home-range dynamics in meerkats, *Suricata suricatta:* a mechanistic modelling approach*, Journal of Animal Ecology*. 84(1): 260-271

44. **Potts, J.R.,** Mokross, K., Lewis, M.A. (2014) A unifying framework for quantifying the nature of animal interactions. *Journal of the Royal Society Interface*. 11(96): 20140333.

45. **Jin, Y**., Hilker, F., Steffler, P., Lewis, M.A. (2014) Seasonal invasion dynamics in a spatially heterogeneous river with fluctuating flows. *Bulletin of Mathematical Biology*. 76(7): 1522-1565.

46. **Potts, J.R.,** Lewis, M.A. (2014) How do animal territories form and change?  Lessons from 20 years of mechanistic modeling. *Proceedings of the Royal Society B*. 281: 20140231.

47. **Potts, J.R.,** Lewis, M.A. (2014) A mathematical approach to territory formation. *American Mathematical Monthly*.121(9): 754-770

48. Jacobsen, J., **Jin, Y**., Lewis, M.A. (2014) Integrodifference models for persistence in temporally varying river environments. *Journal of Mathematical Biology*. 70(3): 549-590

49. Drolet, D., Locke, A., Lewis, M.A., Davidson, J. (2014) User-friendly and evidence-based tool to evaluate probability of eradication of aquatic non-indigenous species. *Journal of Applied Ecology*.  51(4): 1050-1056.

50. **Potapov, A., Schlaegel, U**., Lewis, M.A. (2014) Evolutionary stable diffusive dispersal. *Discrete and Continuous Dynamical Systems B* 19(10): 3319-3340.

51. **Molnár, P.K.**, Lewis, M.A., Derocher, A.E. (2014) Estimating Allee thresholds before they can be observed: polar bears as a case study.  *PLoS One*. ONE 9(1): e85410

52. **Peacock, S.,** Connors, B., Krkošek, M., Irvine, J.S., Lewis, M.A. (2014) Can reduced

predation offset negative effects of sea louse parasites on chum salmon? *Proceedings of the Royal Society of London B* 281(1776): 20132913.

53. **Potts, J.R.,** Bastille-Rousseau, G., Murray, D., Schaefer, J., Lewis, M.A. (2013) Predicting local and nonlocal effects of resources on animal space use using a mechanistic step-selection function. *Methods in Ecology and Evolution.* 5(3): 253-262.

54. Fagan, W., Lewis, M.A., **Auger-Methe, M**., Avgar, T., Benhamou, S., **Breed, G**., LaDage, L., **Schlägel, U.E**., Tang, W., Papastamatiou, Y.P., Forester, J., Mueller, T. (2013) Spatial memory and animal movement. *Ecology Letters,* 16(10): 1316-1329.

55. **Huang, Q**., **Parshotham, L.,** Wang. H. Bampfylde, C., Lewis, M.A. Mathematical risk assessment of contaminants on fish population dynamics. (2013), *Journal of Theoretical Biology*, 334: 71-79.

56. Krkošek, M., **Ashander, J.,** Frazer, N., Lewis, M.A., (2013) Allee effect from parasite spill-back. *American Naturalist*, 182(5): 640-652.

57. **Rajakaruna, H**., **Potapov, A**., Lewis, M.A. (2013) Impact of stochasticity in immigration and reintroductions on colonizing and declining populations. *Theoretical Population Biology*, 85: 38-48.

58. **Potapov, A**., Merrill, E., Pybus, M., Coltman, D., Lewis, M.A. (2013) Chronic wasting disease: Possible transmission mechanisms in deer. *Ecological Modelling*, 250: 244-257.

59. **Peacock, S.J**., Krkošek, M., Proboscsz, S., Orr, C., Lewis, M.A. (2013) Cessation of a salmon decline with control of parasites. *Ecological Applications*, 23(3): 606-620.

60. Lewis, M.A., Li, B. (2013) Spreading speed, traveling waves and the minimal domain size in impulsive reaction-diffusion models, *Bulletin of Mathematical Biology,* 74(10): 2383-2402.

61. **Potapov, A**., Merrill, E., Lewis, M.A. (2012) Wildlife disease elimination and density dependence. *Proceedings of the Royal Society B,* 279(1741): 3139-3145.

62. **McKenzie, H.W.,** Merrill, E.H., Spiteri, R., Lewis, M.A. (2012) How linear features alter predator movement and the functional response *Royal Society Interface Focus*, 2(2): 205-216.

63. Krkošek, M., Connors, B.M., Lewis, M.A., Poulin, R. (2012) Allee effects may slow the spread of parasites in a coastal marine ecosystem. *American Naturalist,* 179(3): 401-412.

64. **Ashander, J., Krkošek, M.**, Lewis, M.A. (2012). Aquaculture-induced changed to dynamics of migratory hosts and specialist parasite: A case study of pink salmon and sea lice. *Theoretical Ecology*, 5(2): 231-252.

65. **Rajakaruna, H., Strasser, C.**, Lewis, M.A. (2012) Indentifying non-invasible habitats for marine copepods using temperature-dependent $R_0$. *Biological Invasions*, 14(3): 633-647.

66. **Jin, Y.,** Lewis, M.A. (2012) Seasonal influences on population spread and persistence in streams: Spreading speeds. *Journal of Mathematical Biology*, 65(3): 403-439.

67. **McKenzie, H.W., Jin, Y.** Jacobsen, J.T., Lewis, M.A. (2012) $R_0$ analysis of a spatiotemporal model for a stream population *SIAM J. on Applied Dynamical Systems,* 11(2): 567-596.

68. **Potapov, A., Muirhead, J.M,** Yan, N, Lele, S., Lewis, M.A**. (**2012**).** Models of lake invasibility by *Bythotrephes longimanus*, a nonindigenous zooplankton. *Biological Invasions*, 13(11): 2459-2476.

69. Yan, N.D, Leung, B., Lewis, M.A., Peacor, S.D. (2011) The spread, establishment and impacts of the spiny water flea, *Bythotrephes longimanus*, in temperate North America: a synopsis of the special issue. *Biological Invasions*, 13(11): 2423-2432.

70. Krkošek, M, Connors, B.M., Morton A., Lewis, M.A. Dill L.M. Hilborn R. (2011) Effects of parasites from salmon farms on productivity of wild salmon. *Proceedings of the National Academy of Sciences,* 108(35): 14700-14704.

71. **Strasser, C.A,** Dibacco, C, Lewis, M.A. (2011). A mechanistic model for understanding

invasions with environment as a predictor of population success. *Diversity and Distributions*, 17(6): 1210-1224.

72. **Auger-Méthé, M.**, Cassidy St. Clair, C., Lewis, M.A., Derocher, A.E. (2011). Sampling rate and misidentification of Lévy and non-Lévy movement paths: Comment. *Ecology* 92(8): 1699-1701.

73. **Muirhead, J**., Lewis, M.A., MacIsaac, H.J. (2011). Prediction and error in multi-stage models for spread of aquatic invasive species. *Diversity and Distributions* 17(2): 323-337.

74. **Wittmann, M.J**, Lewis, M.A., Young, J.D., Yan, N.D. (2011) Temperature-dependent Allee effects in a stage-structured model for *Bythotrephes* establishment. *Biological Invasions*, 13(11): 2477-2497.

75. **Jin, Y.,** Lewis, M.A. (2011). Seasonal influences on population spread and persistence in streams: Critical domain size *SIAM J. Appl. Math*. 71(4): 1241-1262.

76. **Krkošek, M.,** Connors, B.M., Ford, H. Peacock, S., Mages, P. Ford, J.S., Morton, A., Volpe, J.P., Hilborn, R., Dill, L.M., Lewis, M.A. (2011). Fish farms, parasites, and predators: implications for salmon population dynamics *Ecological Applications* 21(3): 897-914.

77. **Potapov, A**, **Muirhead, J.M**., Lele, S.R., Lewis, M.A. (2011). Stochastic gravity models for modeling lake invasions. *Ecological Modelling,* 222(4): 964–972.

78. **Molnár, P.K.**, Derocher, A.E., Klanjscek, T., Lewis, M.A. (2011). Predicting climate change impacts on polar bear litter size. *Nature Communications*, 2: 186.

79. **Marleau, J.N., Jin, Y.**, Bishop, J., Fagan, W.F., Lewis, M.A. (2011). A Stoichiometric model of early plant primary succession on Mount St. Helens. *American Naturalist*, 177(2): 233-245.

80. **Molnár, P.K.**, Derocher, A.E., Theimann, G., Lewis, M.A. (2010). Predicting survival, reproduction and abundance of polar bears under climate change. *Biological Conservation*, 143(7): 1612-1622.

81. Finnoff, D., **Potapov, A.**, Lewis, M.A. (2010). Control and the management of a spreading invader. *Resource and Energy Economics*, 32(4): 534–550.

82. Lewis, M.A., **Nelson, W.**, Xu, C. (2010). A Structured Threshold Model for Mountain Pine Beetle Outbreak. *Bull. Math. Biol*. 72(3): 565–589.

83. **Krkošek, M.**, Lewis, M. A. (2010). An $R_0$ theory for source-sink dynamics with applications to *Dreissena* competition. *Theoretical Ecology,* 3(1): 25–43.

84. **Hamelin, F**., Lewis, M.A. (2010) A differential game theoretical analysis of mechanistic models for territoriality. *Journal of Mathematical Biology,* 61(5): 665-694.

85. **Hilker,** F.M., Lewis, M.A. (2010). Predator-prey systems in streams and rivers. *Theoretical Ecology*, 3(3): 175-193.

86. **de Camino-Beck, T**., Lewis, M.A. (2009) Invasion with stage-structured coupled map lattices: Application to the spread of scentless chamomile. *Ecological Modelling*. 220(23): 3394-3403.

87. **Molnár, P.K**, Klanjscek, T., Derocher, A., Obbard, M.E., Lewis, M.A. (2009). A body composition model to estimate mammalian energy stores and metabolic rates from body mass and body length, with application to polar bears. *Journal of Experimental Biology*, 212(Pt15): 2313-2323.

88. **Krkošek, M.**, Morton, A., Volpe, J.P., Lewis, M.A. (2009). Sea lice and salmon population dynamics:Effects of exposure time for migratory fish *Proceedings of the Royal Society of London B*, 276(1668): 2819-2828.

89. **Cobbold, C.A.**, Roland, J., Lewis, M.A. (2009). The impact of parasitoid emergence time on host parasitoid population dynamics. *Theoretical Population Biology*, 75(2-3): 201-215.

90. **Lee, J.M.**, Hillen, T., Lewis, M.A. (2009). Pattern formation in prey-taxis systems. *Journal of*

*Biological Dynamics,* 3(6): 551–573.

91. **Jerde, C.L, Bampfylde, C.J**., Lewis, M.A. (2009). Chance establishment for sexual, semelparous species: Overcoming the Allee effect. *American Naturalist*, 173(6): 734-746.

92. **de Camino-Beck, T**.,  Lewis, M.A., and van den Driessche, P. (2009). Graph-theoretic method for the basic reproduction number in continuous time epidemiological models. *Journal of Mathematical Biology*, 59(4): 503-516.

93. **McKenzie, H.W.**, Lewis, M.A., Merrill, E.H. (2009). First passage time analysis of animal movement and insights into the functional response. *Bulletin of Mathematical Biology*, 71(1): 107-129.

94. **Eftimie, R.**, de Vries, G., Lewis, M.A. (2009). Weakly nonlinear analysis of a hyperbolic model for animal group formation. *Journal of Mathematical Biology,* 59(1): 37–74.

95. **Li, B**., Lewis M.A, and Weinberger, H.F. (2009). Existence of traveling waves for integral recursions with nonmonotone growth functions. *Journal of Mathematical Biology,* 58(3): 323–338.

96. **McKenzie, H., Jerde, C.**, Visscher, D.R., Merrill, E.H., Lewis, M.A. (2009). Inferring linear feature use in the presence of GPS measurement error. *Environmental & Ecological Statistics,* 16(4):531–546.

97. **Krkošek, M.,** Ford, J.S., Morton, A., Lele, S., Lewis, M.A. (2008). Response to Comment on "Declining wild salmon populations in relation to parasites from farm salmon." *Science*, 322(5909): 1790.

98. **Krkošek, M.**, Ford, J., Morton, A., Lele, S., Lewis, M.  (2008). Sea lice and pink salmon declines: Response to Brooks and Jones. *Reviews in Fisheries Science*, 16(4): 413-420.

99. **Nelson, W.A.**, Lewis, M.A. (2008). Connecting host physiology to host resistance in the conifer-bark beetle system. *Theoretical Ecology,* 1(3): 163-177.

100. **de Camino Beck, T.**, Lewis, M.A. (2008). On net reproductive rate and the timing of reproductive output. *American Naturalist*. 172 (1): 128-139.

101. **Potapov, A.B.**, Lewis, M.A. (2008). Allee effect and control of lake system invasion. *Bulletin of Mathematical Biology*, 70(5): 1371-1397.

102. **Molnár, P.K**, Derocher, A.E., Lewis, M.A. Taylor, M.K. (2008). Modeling the mating system of polar bears - a mechanistic approach to the Allee effect. *Proceedings of the Royal Society of London B,* 275(1631): 217-226.

103. **Lee, J.M.**, Hillen, T., Lewis, M.A. (2008).  Continuous travelling waves for Prey-taxis. *Bulletin of Mathematical Biology,* 70(3): 654-676.

104. **Nelson, W.A., Potapov, A**., Lewis, M.A., Hundsdorfer, A., He, F. (2008). Balancing ecological complexity in predictive models: A reassessment of risk models in the mountain pine beetle. *Journal of Applied Ecology,* 45(1): 248-257.

105. **Eftimie, R.**, de Vries, G., Lewis, M.A. (2007). Complex spatial group patterns result from different animal communication mechanisms. *Proceedings of the National Academy of Sciences,* 104: 6974-6979.

106. **Krkošek, M.**, Ford, J.S., Morton, A., Lele, S., Myers, R.A., Lewis, M.A. (2007). Declining wild salmon populations in relation to parasites from farm salmon. *Science,* 318: 1772-1775.

107. **Krkošek, M.**, Gottesfeld, A., Proctor, B., Rolston, D., Carr-Harris, C., Lewis, M.A. (2007). Effects of host migration, diversity, and aquaculture on disease threats to wild fish populations. *Proceedings of the Royal Society of London, Series B,* 274: 3141-3149.

108. **Krkošek, M.**, Lauzon-Guy, J.S, Lewis, M.A. (2007). Relating dispersal and range expansion of California sea otters. *Theoretical Population Biology*, 71: 401-407.

109. **Jerde, C.**, Lewis, M.A. (2007). Waiting for invasions: A framework for the arrival of non-

indigenous species. *The American Naturalist,* 170: 1-9.

110. Weinberger, H.F., Lewis, M.A., Li, B. (2007). Anomalous spreading speeds of cooperative recursion systems. *Journal of Mathematical Biology,* 55: 207-222.

111. **Lutscher, F.**, McCauley, E., Lewis, M.A. (2007). Spatial patterns and coexistence mechanisms in systems with unidirectional flow. *Theoretical Population Biology,* 71(3): 267-277.

112. **Noonburg, E.G.**, Newman L.A., Lewis, M.A., Crabtree, R., **Potapov, A.** (2007). Sequential decision-making in a variable environment: Modeling elk movement in Yellowstone National Park as a dynamic game. *Theoretical Population Biology,* 71(2): 182-195.

113. **de Camino Beck, T**., Lewis, M.A. (2007). A new method for calculating net reproductive value from graph reduction with applications to the control of invasive species. *Bulletin of Mathematical Biology,* 69: 1341-1354

114. **Eftimie, R.**, de Vries, G., Lewis, M.A., Lutscher, F. (2007). Modeling group formation and activity patters in self-organizing collectives of individuals. *Bulletin of Mathematical Biology,* 69(5): 1537-1565.

115. **Bampfylde, C.**, Lewis, M.A. (2007). Biological control through intraguild predation: Case studies in pest control, invasive species and range expansion. *Bulletin of Mathematical Biology,* 69: 1031-1066.

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### Distinguished Lectures (since 2011):
- Plenary Speaker, 7th International Congress on Industrial and Applied Mathematics (2011);
- Ireland Lecture, University of New Brunswick (2012);
- Howard Rowlee Lecture, University of Nebraska (2012);
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**Awards:**
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- National Young Investigator Award (NSF), 94–99;
- University of Utah Faculty Fellowship, 98–98;
- Senior Canada Research Chair in Mathematical Biology, 01–22;
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- American Society of Naturalists Presidential Award, 06;
- McCalla Professorship (Alberta), 07–8;
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- Canadian Applied and Industrial Mathematics Society Research Prize, 09;
- CRM-Fields-PIMS Prize for Exceptional Research in Mathematics, 11;
- Fields Institute Fellow, 11-present;
- University of Victoria Distinguished Alumni Award, 12;
- Killam Research Fellowship, 12-14;
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- Fellow of the Royal Society of Canada, 15;
- Faculty of Science Graduate Mentoring Award (Alberta), 16;
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- Killam Award for Excellence in Mentoring (Alberta), 16.

**Grants: 12 grants with total current funding of CAN \$21,916591 (selected grants shown)**
- Assessment and analysis of ecological dynamics under environmental change, 2014-18, \$155,059. *CFI (John Evans Leadership Fund), \$155,059* (*AIAE*);
- The Banff International Research Station for Mathematical Innovation and Discovery (BIRS), 2016-20 (Nassif Ghoussoub PI),  \$3.405,000 (*NSERC*), \$4,042,918 (*AIAE*);
- The Pacific Institute for the Mathematical Sciences (PIMS), 2014-19 (Alejandro Adem PI), \$5,750,000 (*NSERC CTRMS), \$*1,350,000 (*AIAE*);
- Enhancing Canada's Prosperity through Innovative Environmental Assessment, Monitoring and Management, 2014-2020 (Murray Humphries PI), \$1,650,000 (*NSERC CREATE*);
- Turning risk into action (TRIA) for the Mountain Pine Beetle epidemic*,* 2013-17 (Janice Cooke PI), \$2,977,148 (*NSERC Strategic Network and Partners*);
- Spatial Dynamics in Ecology, 2011–18, \$553,000 (\$79 K per annum) (*NSERC Discovery*).

**Editorial:**
Chief Editor:
- *Journal of Mathematical Biology* (since 08).

<u>Editorial Boards</u>:
- *Springer Series: Mathematics of Planet Earth* (since 14);
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- *Journal of Biological Dynamics* (since 06);
- *Bulletin of Mathematical Biology* (since 06);
- *Applied Math Research eXpress* (05-08);
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- *Academic Press Theoretical Ecology Series Editorial Advisory Board,* (since 02);
- *Ecology* and *Ecological Monographs* (01-04);
- *Journal of Mathematical Biology* (00-08);
- *Journal of Theoretical Biology* (97-01);
- *IMA Journal of Mathematics Applied to Biology and Medicine* (96-06).

**Supervised: 11 MSc, 20 PhD, 34 Postdocs**
Over half of the PhDs and postdocs trained are now faculty members at universities worldwide.

**Societies:**
- Ecological Society of America (ESA);
- Society for Industrial and Applied Mathematics (SIAM);
- Canadian Applied and Industrial Mathematics Society (CAIMS);
- Society for Mathematical Biology (SMB);
- Canadian Mathematical Society (CMS).

**Advisory:**
- Chair, Applied Mathematics Committee, NSERC Evaluation Group in Mathematics and Statistics (EG 1508), 2016-17;
- NSERC Evaluation Group in Mathematics and Statistics (EG 1508), 2014-17;
- NSERC Mathematics and Statistics Liaison Committee, 2016;
- Chair, Pacific Institute for Mathematical Sciences Scientific Review Panel, 2015-present;
- Pacific Institute for Mathematical Sciences Scientific Review Panel, 2012-present;
- Scientific Board, Institute for Mathematical Sciences, Renmin University of China, 2014-16;
- Canadian Institute of Ecology and Evolution, Scientific Advisory Committee, 2009-16;
- Canadian Aquatic Invasive Species Network Scientific Committee, 2006-7, 2009-15;
- Chair, Mathematical Biosciences Institute Scientific Advisory Committee, 2009-11;
- Mathematical Biosciences Institute Scientific Advisory Committee Chair 2007-11;
- Mathematical Biosciences Institute Board of Trustees, 2007-11;
- Society for Industrial and Applied Math Program Committee, 2008-11;
- Mathematics of Information Technology and Complex Systems (MITACS) Board of Directors, 2009-10;
- Pacific Institute for Mathematical Sciences Board of Directors, 2004-05 and 2006-09;
- NSERC Grant Selection Committee in Ecology and Evolution, 2004-05 and 2006-08;

- Mathematical Biosciences Institute Board of Scientific Governors, 2006-07;
- Banff International Research Station for Mathematical Innovation and Discovery Scientific Advisory Board, 2001-04;
- National Science Foundation Review Committee for Mathematical Biosciences Institute, 2004;
- *Journal of Theoretical Biology* Advisory Board, 2001–03;
- Alberta Ingenuity Fund Associateship Panel, 2002;
- Panel member for the NSF/NIH joint NIGMS grant committee in mathematical biology, 2002;
- Banff International Research Station for Mathematical Innovation and Discovery Steering Committee 2001-02.