

A. NAME (TITLE): LAURENCE PACKER (Professor of Biology)

B. DEGREES

B.A. (hons.) Zoology	1976	University of Oxford
Postgraduate Certificate in Education	1977	Christchurch College, Canterbury
Ph.D.	1986	University of Toronto

C. EMPLOYMENT

1999- present	Full Professor, Department of Biology, Faculty of Pure and Applied Science
1995-1999	Associate Professor, Dept. of Biology, Faculty of Pure and Applied Science and Faculty of Environmental Studies, York University
1993-1995	Assistant Professor, Dept. of Biology, Faculty of Pure and Applied Science and Faculty of Environmental Studies, York University
1988-1993	University Research Fellow, Assistant Professor, Dept. of Biology, Faculty of Pure and Applied Sciences, York University
1987-1988	Post-Doctoral Research Fellow, Department of Biological Sciences, University of Calgary
1986-1987	Assistant Professor of Biology, (Sabbatical Replacement), University College of Cape Breton
1981-1986	Demonstrator in General Entomology, Department of Zoology, University of Toronto
1978-1980	Lecturer in Ecology, Christ Church College, Canterbury, Kent, UK

D. PROFESSIONAL ACTIVITIES

- 1) I was one of 7 instructors for the international bee course held at the American Museum of Natural History's South Western Research Station for 2003-2005 and 2007 and will do this alternate years from 2009.
- 2) COSEWIC co-chair of the Arthropods SSC, January 2007-present.
- 3) Taught a course on the identification of African bees at the National Museum of Kenya, Nairobi for two weeks in July 2008.
- 4) Reviewer for Science, Nature, PNAS, Proceedings of the Royal Society of London, TREE, Systematic Entomology, Evolution, Behavioral Ecology and Sociobiology, Behavioral Ecology, Zoological Journal of the Linnean Society, Biological Journal of the Linnean Society, Heredity, Insectes Sociaux, Biochemical Genetics, Journal of the Kansas Entomological Society among others.
- 5) Member of the North American Pollinator Protection Campaign, 2002-present.
- 6) Co-organizer (with Miriam Richards) of a symposium "the myth of the sterile worker" for the 2006 international congress of the International Union for the Study of Social Insects held in Washington DC, in July 2006.
- 7) Our work on bee barcoding and bees in general resulted in considerable media attention in 2008 and 2009, three television appearances and numerous newspaper reports each year. The conservation genetics of bees has received wide coverage with a commentary in TREE, an interview with the Toronto Star, published August 7th, 2005 (listed as one of the 100 highlights of the year in the year end edition), a television appearance on more2life, TVO, September 15th 2005.

E. GRADUATE STUDENTS

	Past Totals	Current
Postdoctoral Fellows	1	1
PhD	4	4
Masters	10	5

Since 1998:

<u>Name</u>	<u>Degree</u>	<u>Dates</u>	<u>Title</u>
Hume Douglas*	Masters	1998-2001	A revision of the North American <i>Cardiophorus</i> Species found east of the Rocky Mountains
Jessica Janjic *	Masters	1999-2001	Phylogeny of the bee genus <i>Agapostemon</i>
Pak Kin Chan	Masters	2002-2004	Oak savannahs in southern Ontario, are we ready for reintroduction of the Karner Blue Butterfly yet?

Jennifer Grixti	Masters	2002-2004	Bee biodiversity in southern Ontario
Robin Sellars	Masters	2001-2003	Sociobiology of <i>Halictus farinosus</i>
Sophie Cardinal	Masters	2002-2004	Use of the sting apparatus in bees systematics
Hien Ngo	Masters	2005-2008	Coffee pollination in Costa Rica
Anne-Isabelle Gravel	Masters	2005-	Bee biodiversity in Argentina
Alana Taylor	Masters	2005-2007	Bee biodiversity in oak savannah in southern Ontario
Erin Willis	Masters	2005-2007	Revision of <i>Chilicola</i> (<i>Chilioediscelis</i>)
Sheila Dumesh	Masters	2008-	Revision of the genus <i>Mexalictus</i>
Amro Zayed	PhD	2001-2006	Bee Conservation Genetics
Jason Gibbs	PhD	2005-	Barcoding <i>Dialictus</i>
Sheila Colla	PhD	2005-	Bumble bee conservation
Alana Taylor	PhD	2007-	Impact of fire on bee communities
Hien Ngo	PhD	2008-	Bees in coffee agroecosystems in Vietnam

F. CURRENT RESEARCH FUNDING

NSERC Research Networks Grant

The microgenomics network: advancing knowledge of biodiversity through DNA barcodes (P. Hebert PI with 37 additional applicants including L. Packer)

Packer component of above 2005-present \$85,000pa

NSERC discovery grant 2007-2012 \$55,820pa

CFI, Canadian University Biodiversity Consortium 2007-2010 \$86,349
(York University component)

ORF, Canadian University Biodiversity Consortium 2007-2010 \$306,753
(L. Packer at York as PI)

CFH, Bee Biodiversity in Coffee Plantations in Vietnam 2008-2009 \$25,952.85

NSERC Research Networks Grant
 The Canadian Pollinator Initiative,
 PI Dr. P. Kevan, Guelph. York component. 2009-2014 ~\$100,00pa

FAO Preparation of a key for the identification of the bee 2008-2009 US\$10,000
 families of the world

G RESEARCH PUBLICATIONS

1A. *Refereed Journal Papers*

- A101. Sheffield, C.S., P.D.N. Hebert, P. Kevan and L. Packer. (2009). DNA barcoding a regional bee (Hymenoptera: Apoidea) fauna and its potential for ecological studies. *Molecular Ecology Resources*. 9:196-207.
- A100. Packer, L., J.Gibbs, C.S. Sheffield and R. Hanner. (2009). DNA barcoding and the mediocrity of morpholoty. *Molecular Ecology Resources*. 9:42-50.
- A99. Packer, L. (2009). A remarkable new species of *Geodiscelis* from Argentina (Hymenoptera: Colletidae). *Transactions of the Kansas Academy of Sciences*. 12 ms pages.
- A98. Colla, S. and L. Packer. 2008. Evidence for the decline of eastern North American bumble bees, with special focus on *Bombus affinis* Cresson, 1863. *Insect Conservation*. 17: 1379-1391.
- A97. Danforth, B.N. C. Eardley, L. Packer, K. Walker and F.J. Randrianambinintsoa. 2008. Phylogeny of Halictidae with an emphasis on endemic African Halictinae. *Apidologie* 39:86-101.
- A96. Almeida, E.A.B., B.N. Danforth and L. Packer. 2008. Phylogeny of the Xeromelissinae (Hymenoptera: Colletidae) based upon morphology and molecules. *Apidologie* 39:75-85.
- A95. Packer, L. 2008. Phylogeny and classification of the Xeromelissinae (Hymenoptera: Apoidea, Colletidae) with special emphasis upon the genus *Chilicola*. *Systematic Entomology*. 33:72-96.
- A94. Willis, E. and L. Packer. 2008. Revision of *Chilicola* (*Chilioediscelis*). *Zootaxa*, 1762:29-52.
- A93. Zayed, A., S. A. Constantin and L. Packer. 2007. Successful biological invasion despite a severe genetic load. *PLoS ONE*:2:e868 doi:10.1371/journal.pone.0000868.
- A92. Packer, L., A.-I. Gravel, and G. LeBuhn. 2007. Social organization of *Halictus (Seladonia) tripartitus* Cockerell (Hymenoptera: Halictidae). *Journal of Hymenoptera Research*.

- A91. Packer, L., J.A. Genaro and C.S. Sheffield. 2007. The bee genera of eastern Canada. Canadian Journal of Arthropod Identification.
http://www.biology.ualberta.ca/bsc/ejournal/pgs_03/pgs_03.html
- A90. Packer, L. 2007. *Mydrosoma micheneri* Packer, new species, a new diploglossine bee from Brasil (Hymenoptera: Colletidae). Journal of Hymenoptera Research. 16:277-280.
- A89. Zayed, A. and L. Packer. 2007. The population genetics of a solitary oligolectic sweat bee, *Lasioglossum (Sphecodogastra) oenotherae* (Hymenoptera: Halictidae). Heredity 99:397-405.
- A88. Packer, L. 2007. Phylogeny and classification of the Xeromelissinae (Hymenoptera: Apoidea, Colletidae) with special emphasis upon the genus *Chilicola*. Systematic Entomology 33:72-96.
- A87. Packer, L. and J.A. Genaro. 2007. Fifteen new species of *Chilicola* (Hymenoptera: Colletidae). Zootaxa, 1468:1-55.
- A86. Kremen, C., N. M. Williams, M.A. Aizen, B. Gemmill-Herren, G. Lebuhn, R. Minckley, L. Packer, S. G. Potts, T. Roulston, I. Steffan-Dewenter, D. Vazquez, R. Winfree, L. Adams, E. E. Crone, S. S. Greenleaf, T. H. Keitt, A. Klein, J. Regetz, T. Ricketts. 2007. Pollination and other ecosystem services produced by mobile organisms: a conceptual framework for the effects of land use change. Ecology Letters, 10:299-314.
- A85. Cardinal, S. and L. Packer. 2007. Phylogenetic analysis of the corbiculate Apinae based on morphology of the sting apparatus. Cladistics 23:99-118.
- A84. Chan, P.K. and L. Packer. 2006. Are we ready for reintroduction of the Karner Blue Butterfly? Restoration Ecology. 14:645-652.
- A83. Gibbs, J. and L. Packer. 2006. Revision and phylogenetic analysis of *Chilicola sensu stricto* (Hymenoptera: Colletidae) with the description of a new species. Zootaxa 1355:1-37.
- A82. Packer, L. 2006. Use of artificial arenas to predict the social organisation of halictine bees: Data for fourteen species from Chile. Insectes Sociaux, 53:307-315.
- A81. Gixti, J.C., and L. Packer. 2006. Bee community composition change over a 35 year period. Canadian Entomologist 138:147-164.
- A80. Packer, L. 2006. A new *Leioproctus* with unique wing venation in males (Hymenoptera: Colletidae; Paracolletinae) with comments on unusual wing modifications in bees. Zootaxa, 1104:47-57.
- A79. Steffan-Dewenter, I., S.G. Potts and L. Packer. 2005. Pollinator diversity and crop

- pollination services are at risk. *Trends in Ecology and Evolution*, 20:651-652.
- A78. Genaro, J. and L. Packer 2005. A revision of the genus *Xenochilicola* (Hymenoptera: Colletidae) with the description of a new species. *Zootaxa*, 1054:1-14.
- A77. Zayed, A., L. Packer, J.C. Grixti, L. Ruz, R.E. Owen and H. Toro. 2005. Increased genetic differentiation in a specialist versus a generalist bee: implications for conservation. *Conservation Genetics* 5:1017-1026.
- A76. Zayed, A. and L. Packer. 2005. Complementary sex determination substantially increases extinction proneness in haplodiploid populations. *Proceedings of the National Academy of Sciences*. 102:10742-10746.
- A75. Packer, L. 2005. The influence of marking upon bee behaviour in circle tube experiments with a methodological comparison among studies. *Insectes Sociaux*. 52: 139-146.
- A74. Packer, L. 2005. A New Species of *Geodiscelis* (Hymenoptera: Colletidae: Xeromelissinae) from the Atacama Desert of Chile. *Journal of Hymenoptera Research*. 14:84-91.
- A73. Packer, L. 2004. Taxonomic and behavioural notes on Patagonian Xeromelissinae with the description of a new species (Hymenoptera: Colletidae). *Journal of the Kansas Entomological Society*. 77: 78:95-110.
- A72. Packer, L., A. Zayed, J.C. Grixti, L. Ruz, R.E. Owen, F. Vivallo and H. Toro. 2005. Conservation genetics of potentially endangered mutualisms: reduced levels of genetic variation in specialist versus generalist bees. *Conservation Biology* 19:195-202.
- A71. Zayed, A., D.W. Roubik and L. Packer. 2004. Use of diploid male frequency data as an indicator of pollinator decline. *Proceedings of the Royal Society of London*. B. 271: S9-S12.
- A70. Grixti, J., Zayed, A., and L. Packer. 2004. Behavioural interactions among females of *Acamptopoeum submetallicum* (Spinola) and *Nolanomelissa toroi* Rozen (Hymenoptera: Andrenidae). *Journal of Hymenoptera Research* 13: 48-56.
- A69. Packer, L. 2004. Morphological variation in the gastral sterna of female Apoidea (Insecta: Hymenoptera). *Canadian Journal of Zoology* 82: 130-152.
- A68. Packer, L. 2003. The comparative morphology of the skeletal parts of the sting apparatus of bees (Hymenoptera: Apoidea). *Zoological Journal of the Linnean Society* 138:1-38.
- A67. Packer, L., B.W.T., Coelho, S. Mateus and R. Zucchi. 2003. Behavioral Interactions Among Females of *Halictus (Seladonia) lanei* (Moure) (Hymenoptera: Halictidae). 76: 177-182.
- A66. Janjic, J., and L. Packer. 2003. Phylogeny of the bee genus *Agapostemon* (Hymenoptera: Halictidae). *Systematic Entomology* 28:101-124.

- A65. Packer, L. and J. Taylor. 2002. Genetic variation within and among populations of an arctic alpine sweat bee (Hymenoptera: Halictidae). *The Canadian Entomologist*. 134: 619-632.
- A64. Zayed, A., and L. Packer. 2002. Genetic differentiation across a behavioural boundary in a primitively eusocial bee (Hymenoptera: Halictidae). *Insectes Sociaux*. 49: 282-288.
- A63. Zayed, A. and L. Packer. 2001. High levels of diploid male production in a primitively eusocial bee (Hymenoptera: Halictidae). *Heredity*. 87: 631-636.
- A62. Toro, H. and L. Packer. 2001. Nuevas especies chilenas de Xeromelissinae (Hymenoptera: Colletidae). *Acta Entomologica Chilena*. 25: 47-50.
- A61. Packer, L. and R. E. Owen. 2001. Population genetic aspects of pollinator decline. *Conservation Ecology*. 5(1): 4. <http://www.consecol.org/vol5/iss1/art4>, no page numbers available in online final version. 43 pages in hardcopy.
- A60. Janjic, J. and L. Packer. 2001. New descriptions of *Halictus (Seladonia)* from the new world. *Journal of Hymenoptera Research*. 10:55-75.
- A59. Pabalan, N., K.G. Davey and L. Packer. 2000. Temporal variation in dominance behaviors of *Halictus ligatus*. *Journal of Insect Behavior*. 13:627-650.
- A58. Kerr, J.T., A. Sugar and L. Packer 2000. Indicator taxa, rapid biodiversity assessment, and nestedness in an endangered ecosystem *Conservation Biology* 14:1726-1734.
- A57. Packer, L. 2000. The biology of *Thrincohalictus prognathus* (Hymenoptera: Halictidae) in Israel. *Journal of Hymenoptera Research*. 9: 53-61.
- A56. Plateaux-Quénu, C., L. Plateaux and L. Packer. 2000. Population-typical behaviours are retained when eusocial and non-eusocial forms of *Evyllaeus albipes* (F.) (Hymenoptera; Halictidae) are reared simultaneously in the laboratory. *Insectes Sociaux*. 47:263-270.
- A55. Danforth, B.N., H. Sauquet and L. Packer, 1999. Phylogeny of the bee genus *Halictus* (Hymenoptera; Halictidae) based on parsimony and likelihood analyses of nuclear EF-1 α sequence data. *Molecular Phylogenetics and Evolution*. 13: 605-618.
- A54. Packer, L. A. Porsa, C. Plateaux-Quénu and L. Plateaux. 1999. A cryptic species allied to *Evyllaeus villosulus* (Kirby) (Hymenoptera: Halictidae). *Annales de la Société Entomologique de France*, 35: 165-171.
- A53. Kerr, J.T., and L. Packer. 1999. The environmental basis of North American species richness patterns among *Epicauta* (Coleoptera: Meloidae). *Biodiversity and Conservation*. 8: 617-628.
- A52. Sugar, A., A. Finamore, H. Goulet, J. Cumming, J.T. Kerr and L. Packer. 1998. A preliminary survey of Symphytan and Aculeate Hymenoptera from oak savannahs in Southern Ontario. *Proceedings of the Entomological Society of Ontario*. 129: 9-18.
- A51. Dunn, M., P.L. Mitchell and L. Packer. 1998. A comparison of the phenology and social biology of two sibling species of *Halictus* in an area of sympatry. *Canadian Journal of*

Zoology. 76: 2207-2213.

- A50. Packer, L. 1998 A phylogenetic analysis of western European species of the *Lasioglossum leucozonium* species group (Hymenoptera: Halictidae): Sociobiological and taxonomic implications. Canadian Journal of Zoology. 76: 1611-1621.
- A49. Danforth, B.N., P.L. Mitchell and L. Packer. 1998 Mitochondrial DNA differentiation between two cryptic *Halictus* (Hymenoptera; Halictidae) species. Annals of the Entomological Society of America. 91: 387-391.
- A48. Packer, L., J. Taylor, D. Savignano, C. Bleser, C. Lane, and L. Sommers. 1998 Population biology of an endangered butterfly, *Lycaeides melissa samuelis* (Lepidoptera; Lycaenidae): Genetic variation, gene flow and taxonomic status. Canadian Journal of Zoology. 76:320-329.
- A47. Richards, M.H. and L. Packer 1998. Demography and relatedness in multiple foundress nests of the social sweat bee: *Halictus ligatus*. Insectes Sociaux. 45: 97-109.
- A46. Plateaux-Quénu, C., L. Plateaux and L. Packer 1998. A test of the mating limitation hypothesis in *Evyllaesus albipes*, a primitively eusocial halictine bee. Journal of Insect Behavior 11: 119-128.
- A45. Kerr, J. T. and L. Packer 1998. Effects of climate change on Canadian mammal species richness. Environmental Monitoring and Assessment 49: 263-270.
- A44. Packer, L. and J. Taylor 1997. How many cryptic species are there? An application of the phylogenetic species concept to genetic data for some comparatively well known bee species. Canadian Entomologist 129:587-594.
- A43. Kerr, J.T. and L. Packer 1997. Habitat heterogeneity determines mammalian species richness in high energy environments. Nature 385:252-254.
- A42. Packer, L. 1997. The relevance of phylogenetic systematics to biology: examples from medicine and behavioural ecology. Mémoires de Muséum National d'Histoire Naturelle special volume: The origin of biodiversity in insects: phylogenetic tests of evolutionary scenarios. P. Grandcolas (Ed.) 173:11-29.
- A41. Carman, G.M. and L. Packer 1997. A cryptic species allied to *Halictus ligatus* Say. (Hymenoptera; Halictidae). detected by allozyme electrophoresis, G.C. Eickwort Memorial Volume. Journal of the Kansas Entomological Society 69:168-176.
- A40. Richards, M.H. and L. Packer. 1996. The socioecology of body size variation in a primitively eusocial bee. Oikos 77:68-76.
- A39. Pabalan, N., K.G. Davey and L. Packer 1996. Comparative morphology of spermathecae in solitary and primitively eusocial bees. Canadian Journal of Zoology 74:802-808.
- A38. Richards, M.H. and L. Packer. 1995. Annual variation in survival and reproduction of the primitively eusocial sweat bee, *Halictus ligatus* (Hymenoptera: Halictidae). Canadian Journal of Zoology 73:933-941.

- A37. Richards, M.H., L. Packer and J. Seger. 1995. Unexpected patterns of parentage and relatedness in a primitively eusocial bee. *Nature* 373:239-241.
- A36. Packer, L., A. Dzinas, K. Strickler and V. Scott. 1995. Genetic differentiation between two host "races" and two species of cleptoparasitic bees and their hosts. *Biochemical Genetics* 33:97-109.
- A35. Packer, L. 1994. *Lasioglossum (Dialictus) tenax* (Sandhouse) (Hymenoptera; Halictidae) as a solitary sweat bee. *Insectes Sociaux* 41:309-313.
- A34. Richards, M.H. and L. Packer. 1994. Trophic aspects of caste determination in a primitively eusocial sweat bee. *Behavioral Ecology and Sociobiology* 34:385-391.
- A33. Packer, L. and R.E. Owen. 1994. Relatedness and sex ratio in a primitively eusocial halictine bee. *Behavioral Ecology and Sociobiology* 34:1-10.
- A32. Owen, R.E. and L. Packer. 1994. Estimation of the proportion of diploid males in populations of Hymenoptera. *Heredity* 72:219-227.
- A31. Li, J., I.B. Heath and L. Packer. 1993. The phylogenetic relationships of the chytridiomycetous gut fungi (Neocallimasticaceae) and the Chytridiomycota II. Cladistic analysis of structural data and description of the Neocallimasticales Ord. nov. *Canadian Journal of Botany* 71:393-407.
- A30. Rosenmeier, L. and L. Packer. 1993. A comparison of genetic variation in two sibling species pairs of haplodiploid insects. *Biochemical Genetics* 31:185-200.
- A29. Packer, L. 1993. Two new species of Halictine bees from high altitude in the New World tropics. *Canadian Journal of Zoology* 71:1653-1662.
- A28. Blanchetot, A., and L. Packer. 1992. Genetic variability in the social bee *Lasioglossum marginatum* and a cryptic undescribed sibling species as detected by DNA fingerprinting and allozyme electrophoresis. *Insect Molecular Biology* 1:89-97.
- A27. Owen, R.E., L.J. Mydnyski, D.B. McCorquodale and L. Packer. 1992. Allozyme variation in bumble bees. *Biochemical Genetics* 30:443-453.
- A26. Packer, L. 1992. The social organisation of *Lasioglossum (Dialictus) laevissimum* in Southern Alberta. *Canadian Journal of Zoology* 70:1767-1774.
- A25. Packer, L., R.E. Owen and C. Plateaux-Quénu. 1992. Electrophoretic evidence that *Lasioglossum (Evyllaesus) mediterraneum* (Bluthgen) is a species distinct from *L. (E.) laticeps* (Schenck) with notes on its phylogenetic position. *Canadian Entomologist* 124:371-380.
- A24. Packer, L. and R.E. Owen. 1992. Variable enzyme systems in the Hymenoptera. *Biochemical Systematics and Ecology* 20:1-7.
- A23. Packer, L. 1991. The evolution of social behaviour and nest architecture in sweat bees of the subgenus *Evyllaesus* (Hymenoptera: Halictidae): A phylogenetic approach. *Behavioral*

Ecology and Sociobiology 29:153-160.

- A22. Packer, L. 1990. Solitary and eusocial nests in a population of *Augochlorella striata* (Provancher) (Hymenoptera; Halictidae) at the northern edge of its range. Behavioral Ecology and Sociobiology. 27:339-344.
- A21. Packer, L. and R.E. Owen. 1990. Allozyme variation, linkage disequilibrium and diploid male production in a population of the primitively social bee *Augochlorella striata* (Hymenoptera; Halictidae). Heredity 65:241-248.
- A20. Packer, L. and R.E. Owen. 1989. Allozyme variation in *Halictus rubicundus*: a primitively social bee (Hymenoptera: Halictidae). Canadian Entomologist 121:1049-1058.
- A19. Packer, L., V. Jessome, C. Lockerbie and B. Sampson. 1989. The phenology and social biology of four sweat bees in a marginal environment: Cape Breton Island. Canadian Journal of Zoology 67:2871-2877.
- A18. Packer, L., B. Sampson, C. Lockerbie and V. Jessome. 1989. Nest architecture and brood mortality in some sweat bees (Hymenoptera; Halictidae) from Cape Breton Island. Canadian Journal of Zoology 67:2864-2870.
- A17. Plateaux-Quénu, C., L. Plateaux and L. Packer. 1989. Preadaptations to sociality in the bivoltine, solitary halictine *Evylaeus villosulus*. Insectes Sociaux 36:245-263.
- A16. Packer, L. and R.E. Owen. 1989. Notes on the biology of *Lasioglossum cooleyi* (Crawford), an eusocial halictine bee (Hymenoptera: Halictidae). Canadian Entomologist 121:431-438.
- A15. Darling, C.D. and L. Packer. 1988. Effectiveness of malaise traps in collecting Hymenoptera: the influence of trap design, mesh size and location. Canadian Entomologist 120:787-796.
- A14. Packer, L. 1988. The effect of *Bombylius pulchellus* (Diptera; Bombyliidae) and other mortality factors upon the biology of *Halictus ligatus* (Hymenoptera; Halictidae) in southern Ontario. Canadian Journal of Zoology 66:611-616.
- A13. Packer, L. and G. Knerer. 1987. The biology of a subtropical population of *Halictus ligatus* Say (Hymenoptera; Halictidae). III. The transition between annual and continuously brooded colony cycles. Journal of the Kansas Entomological Society 60:510-516.
- A12. Packer, L. 1987. The triungulin larva of *Nemognatha (Pauronemognatha) punctulata* LeConte (Coleoptera; Meloidae) with a description of the nest of its host *Megachile brevis pseudobrevis* Say (Hymenoptera; Megachilidae). Journal of the Kansas Entomological Society 60:280-287.
- A11. Packer, L. 1987. A description of the mature larva and cocoon of the bee *Thygater* sp. (Hymenoptera; Anthophoridae). Journal of the New York Entomological Society 95:23-27.
- A10. Packer, L. and G. Knerer 1986. The biology of a subtropical population of *Halictus ligatus* Say (Hymenoptera; Halictidae). I. Phenology and social organisation. Behavioral Ecology and Sociobiology 18:363-375.

- A9. Packer, L. 1986. The biology of a subtropical population of *Halictus ligatus* Say. II. Male behaviour. *Ethology* 72:287-298.
- A8. Packer, L. 1986. The biology of a subtropical population of *Halictus ligatus* Say. IV. A cuckoo-like caste. *Journal of the New York Entomological Society* 94:458-466.
- A7. Packer, L. 1986. The social organisation of *Halictus ligatus* (Hymenoptera; Halictidae) in southern Ontario. *Canadian Journal of Zoology* 64:2317-2324.
- A6. Packer, L. 1986. Multiple foundress associations in a temperate population of *Halictus ligatus*. *Canadian Journal of Zoology* 64:2325-2332.
- A5. Packer, L. and G. Knerer. 1986. An analysis of variation in the nest architecture of *Halictus ligatus* in Ontario. *Insectes Sociaux* 33:190-204.
- A4. Packer, L. and G. Knerer. 1985. Social evolution and its correlates in bees of the subgenus *Evyllaesus*. *Behavioral Ecology and Sociobiology* 17:143-149.
- A3. Packer, L. 1985. The social organisation of two halictine bees from southern Mexico with notes on two bee-hunting philanthine wasps. *Pan-Pacific Entomologist* 51:291-298.
- A2. Packer, L. 1984. The ecological genetics of the speckled wood butterfly, *Pararge aegeria* L. - A preliminary study. *Heredity* 52:179-188.
- A1. Packer, L. 1983. The nesting biology of *Lasioglossum (Evyllaesus) laticeps* (Hymenoptera; Halictidae) in England. *Insectes Sociaux* 30:367-375.

1B. Papers Submitted

- B1. Taylor, A.N. and Packer, L. (submitted October 2008). Bees as bio-indicators for oak savannah restoration. Submitted to *Insect Conservation and Diversity*. 56ms pages.

1C. Papers Published by Graduate Students Whose Research was Entirely Funded by Research Grants Awarded to Laurence Packer

- C11. Genaro, G.A. 2006. Checklist and distribution patterns of apoid wasps (Hymenoptera: Apoidea: Sphecidae and Crabronidae) of Cuba. *Zootaxa*, 1171:47-68.
- C10. Genaro, G.A. 2004. Notas sobre las presas y conducta de nidificación de algunas especies de esfécidos (Hymenoptera: Spheciformes: Crabronidae, Nyssonidae). *Cocuyu* 14:18-19.
- C9. Genaro, G.A. 2004. A new species of *Cerceris* from Hispaniola, West Indies (Hymenoptera: Crabronidae: Philanthinae). *Journal of the Kansas Entomological Society* 77:761-764.
- C8. Zayed, A. 2004. Effective population size of Hymenoptera with complementary sex determination. *Heredity* 93:627-630.

- C7. Romankova, T. 2003. Bees of genus *Colletes* of Ontario (Hymenoptera, Apoidea, Colletidae). *Journal of the Entomological Society of Ontario* 134:91-106.
- C6. Douglas, H. 2003. A revision of the north American *Cardiophorus* (Coleoptera: Elateridae) species found east of the Rocky Mountains. *Canadian Entomologist*. 135:493-548.
- C5. Kerr, J. T., and D.J. Currie. 2000. Evolutionary and environmental controls on broad-scale patterns of biodiversity in North America. *Ecoscience* 6:329-337
- C4. Kerr, J.T. 1999 Weak links: Rappoport's rule and large-scale species richness patterns. *Global Ecology & Biogeography Letters*. 8: 47 - 54
- C3. Kerr, J.T., R. Vincent and D.J. Currie. 1998 Determinants of Lepidopteran richness patterns in North America. *Ecoscience* 5: 448 - 453
- C2. Kerr, J.T. 1997. Species richness, endemism and the choice of areas for conservation. *Conservation Biology* 11:1094-1100. 1997.
- C1. Richards, M.H. 1994. Social evolution in the genus *Halictus*: A phylogenetic approach. *Insectes Sociaux* 41:315-325.

1D. Papers Published in Books

- D9. Owen, R.E., L. Packer and A. Zayed. Diploid males in the Hymenoptera: consequences for conservation genetics. In Raw, A and P. Kevan (eds.) 16 ms pages.
- D8. Chan, P.K. and L. Packer. 2004. When is a site restored? Studies of the suitability of five oak savannah habitats in Ontario for reintroduction of the Karner Blue butterfly (*Lycaeides melissa samuelis*). *Proceedings of the 16th International Conference, Society for Ecological Restoration*. 9pp.
- D7. Chan, P.K. and L. Packer. 2003. Quantitative assessment of potential karner Blue Butterfly (*Lycaeides melissa samuelis*) reintroduction sites in Ontario. In C.J. Lemieux, J.G. Nelson, T.J. Beechey and M.J. Troughton (eds.), *Proceedings of the Parks and Research Forum of Ontario (PRFO) Annual General Meeting May 8-10, 2003, University of Western Ontario*, p. 347-353.
- D6. Packer, L. 1999. The distribution of *Halictus ligatus* Say and *H. poeyi* Lep. (Hymenoptera; Halictidae) in North America. pp 81-84 in: *Entomological contributions in memory of Bryan A. Alexander*. G. W. Byers, R. H. Hagen and R. W. Brooks eds. *National History Museum University of Kansas Special Publication #24*.
- D5. Packer, L. 1998. Reproductive altruism in insects. (pp 118-128.) In. *The Encyclopaedia of Reproduction*. Edited by Adashi, E.Y. et al., *Harcourt - Brace*.
- D4. Packer, L. 1994. Biodiversity and the food supply. pp. 117-123. In: *Human society and the natural world: perspectives on sustainable futures*. Edited by D.V.J. Bell, *et al.*, *Faculty of*

Environmental Studies, North York.

- D3. Packer, L. 1994. The extirpation of the Karner Blue butterfly in Ontario. pp. 143-152. In: *The Karner Blue Butterfly: a symbol of a vanishing landscape*. D. Andow, R. Baker and C. Lane (Eds.). University of Minnesota Press, St. Paul. MN.
- D2. Packer, L. 1993. Multiple foundress associations in sweat bees. pp. 215-233. In: *Queen number and sociality in insects*. Edited by L. Keller. Oxford University Press.
- D1. Packer, L. 1991. The status of two butterflies, Karner Blue (*Lycaeides melissa samuelis*) and Frosted Elfin (*Incisalia irus*), restricted to oak savannah in Ontario. pp. 253-271. In: *Conserving Carolinian Canada* G.M. Allen, P.F.J. Eagles and S.D. Price (Eds.). University of Waterloo Press.

1E. Papers Published in Volumes of Conference Proceedings

- E9 Kerr, J. and L. Packer. 1994. Biodiversity patterns in North American Mammals: the importance of phylogeny. *Proceedings of the XIIIth Meeting of the Willi Hennig Society, Copenhagen*.

The following eight articles were published as short papers in *Proceedings of the International Congress of the International Union for the Study of Social Insects*, Paris, 1994; Bangalore, 1990; Munich, 1987.

- E8. Packer, L. 1994. Intracolony conflicts of interest in the primitively social bee *Lasioglossum laevissimum*. p. 164.
- E7. Packer, L., J. Taylor and M. Richards. 1994. Social devolution in sweat bees. p. 358.
- E6. Pabalan, N., L. Packer and K.G. Davey. 1994. Oosorption and spermathecal morphology in three species of wild bees. p. 489.
- E5. Sakagami, S.F. and L. Packer. 1994. Delayed eusociality in Halictine bees. p. 86.
- E4. Packer, L. 1990. Biochemical systematics and the evolution of social behaviour and nest architecture in sweat bees of the subgenus *Evyllaesus*. p. 666.
- E3. Packer, L. 1987. An unexpectedly high female bias to the sex ratio in a temperate population of *Halictus ligatus*. pp. 353-354.
- E2. Packer, L. 1987. Reproductive competition in two populations of *Halictus ligatus*. pp. 553-554.
- E1. Plateaux-Quénu, C., L. Plateaux and L. Packer. 1987. The biology of a bivoltine population of *Evyllaesus villosulus*. p. 391.

1F. Government Reports

- F4. Packer, L., J.C. Grixti, H. Douglas, J. Janjic, R. Sellars and M. Sommers. 2001. Insect survey of tall-grass prairie in southern Ontario with particular reference to the bees of the Manestar tract. A report submitted to the WWF and OMNR Living Legacy Program, 13pp.
- F3. Packer, L. 1998. A status report on the Frosted Elfin butterfly *Incisalia irus* (Godart) in Canada. A report submitted to COSEWIC, 30pp.
- F2. Packer, L. 1987a. A status report on the Karner Blue butterfly, *Lycaeides melissa samuelis* Nabokov, in Canada. A report prepared for the World Wildlife Fund and the Ontario Ministry of Natural Resources Wildlife Branch, Nongame Program. Unpublished. 66pp.
- F1. Packer, L. 1987b. A status report on some rare lepidopteran species in southern Ontario. A report prepared for the World Wildlife Fund and the Ontario Ministry of Natural Resources, Wildlife Branch, Nongame Program. Unpublished. 38pp.

1G. Book Reviews

- G4. Packer, L. 1998. Review of "The Evolution of Social Behavior in Insects and Arachnids" J.A. Choe and B.J. Crespi (Eds.) C.U.P. Annals of the Entomological Society of America.
- G3. Packer, L. 1994. Review of "The Bee Genera of North and Central America (Hymenoptera: Apoidea)". Edited by C.D. Michener, R.J. McGinley and B.N. Danforth. Smithsonian Institution Press. Bulletin of the Canadian Entomological Society 26:127-129.
- G2. Packer, L. 1992. Review of "The Social Biology of Wasps". Edited by K.G. Ross and R.W. Matthews. Cornell University Press. Bulletin of the Entomological Society of Canada 24:49-50.
- G1. Packer L. 1989. Review of "The Natural History and Behavior of North American Beewolves". By H.E. Evans and K.M. O'Neill. Cornell University Press. Quarterly Review of Biology 64:213-214.

1H. Workshop Proceedings

- H1. Balpataky, K. and L. Packer. 2005. Interdisciplinary approaches to the problems caused by invasive species. Summary of workshop presentations. York University. 39pp.

H. SEMINARS AND PAPERS PRESENTED

Lifetime Total: 93

Invited*: 35

Since 2007

*University of Toronto Alumnus Association. Toronto, October 28, 2008

*Royal Canadian Institute for the Advancement of Science, Toronto, October 26, 2008.

*Entomological Society of Canada, Ottawa, October 21, 2008

*Universidad Nacional Autonoma de Mexico, Colima, October 10, 2008

*V Congreso Mesoamericano de Abejas Sin Aguijon, Merida, Mexico, October 2, 2008

*Encontro de Abelhas, Riberao Preto, Brazil, July 26, 2008

*Encontro de Abelhas, Riberao Preto, Brazil, July 25, 2008

National Museum of Kenya, Nairobi, Kenya, July 15, 2008

International Centre for Insect Physiology and Ecology, Nairobi, Kenya, July 15, 2008

*Pollinator Summit, Durban, South Africa, July 2, 2008.

Pollinator Summit, Durban, South Africa, July 1, 2008

*David Suzuki Foundation Booklet Release, Toronto, May 3, 2008.

Canadian Centre for DNA Barcoding Annual Conference, Royal Ontario Museum, April 26, 2008

*Municipality of Guelph Pollinator Park Opening Event, March 3, 2008

*University of Toronto, Scarborough Campus, March 28, 2008.

I. ADMINISTRATIVE AND PROFESSIONAL WORK

1. Committee Work

1a. *University Committee Work*

- 2005-2006 Chair, Departmental T&P committee
- 2005-2006 Search committee, two animal physiology positions
- 2005-2008 Senate Executive
- 2005-2008 Biology Department Executive Committee
- 2004-2008 Senator
- 2004-2008 FGS Council
- 2002-2006 Member, International Strategic Research Planning Group, York University
- 2002-2003 Search committee for Population Geneticist, Department of Biology
- 2001-2003 Graduate Committee
- 2000-2001 Teaching Committee
- 1999-2000 Chair of the Teaching Committee, Department of Biology
Tenure and Promotion Committee, Department of Biology
Executive Committee, Department of Biology
- 1 Search for Departmental Chair Committee, Department of Biology
Women's Faculty Award position in Molecular Evolution Search Committee
- 1996-1999 PhD Committee, Faculty of Environmental Studies
- 1995-1998 Science Library Committee, Faculty of Pure and Applied Science representative,
York University
- 1995-1997 Seminar Committee, Department of Biology
- 1995-1996 Graduate Curriculum Committee, FES
- 1994-1996 Bethune College Curriculum Committee
- 1993-1994 Tenure and Promotion Committee, Department of Biology
- 1993-1994 Search Committee for Master of Bethune College
- 1993-1994 Science in the Bachelor of Environmental Studies Curriculum Committee

- 1992-1994 Senate Library Committee, Faculty of Graduate Studies representative, York University
- 1991-1993 Applied Ecology Curriculum Development Committee
- 1989-1994 Science Library Committee, Faculty of Pure and Applied Science representative, York University
- 1989-1991 Graduate Committee, Department of Biology, York University
- 1988-1989 Seminar Committee, Department of Biology, York University
- 1986-1990 Canadian Representative on the International Steering Committee of the International Union for the Study of Social Insects.

1b. Government and other Committee Work

- 2008-present Scientific Advisory Committee, NSERC-CANPOLIN
- 2008-present Board of Directors, NSERC-CANPOLIN
- 2007-present COSEWIC (Committee on the Status of Endangered Wildlife in Canada) Co-Chair Arthropods Specialist Subcommittee.
- 2005-present Member, Board of Directors, CCBD
- 2005-present Member of the Board for the Canadian Music Centre
- 2000-2002 Member of Steering Committee for NSERC GSC18 Reallocation exercise.
- 1996-1998 Member of Biological Survey of Canada, Terrestrial Arthropods
- 2 Member of collections and cultures subcommittee for NSERC MFA awards
- 1995 Chair of collections and cultures subcommittee for NSERC MFA awards
- 1994-1997 Member of NSERC GSC18 - evolution and ecology
- 1992-present Karner Blue Recovery Team Member. Led by the Ontario Ministry of Natural Resources.

1c. Workshop Participation

- 1992 Environment Canada Workshop on Environmental Monitoring, Toronto. May 16-19.
- 1992 Agriculture Canada, Canadian Museum of Nature and Forestry Canada Workshop on the Future of Systematics in Canada, Ottawa, June 16-17.

1d. *National and International Initiatives*

- 2008-present Chair of Campaign to Barcode the Bees of the World
- 2003-present Canadian Pollinator Initiative (with Peter Kevan)
- 2001-present Member of North American Pollinator Protection Campaign

1e. *Editorial duties*

- 2005 - 2008 Editor for Apoidea, Zootaxa,
- 2000 - present Editorial board Canadian Journal of Zoology,
- 2000 - present Editorial board Acta Entomologica Chilena,

J. **Teaching**

1a) *Undergraduate Teaching*

1988W	NATSCI 1690.06	Evolution
1989S	BIO 3000 Field Course	General Entomology
1989/90F	BIO 4230.04	General Entomology
1989/90FW	BIO3100.02	Current topics
1990/91W	BIO 4170E.03	Biology of Hymenoptera
1991/92W	BIO 4230.04	General Entomology
1991/92FW	BIO3100.02	Current topics
1992F	BIO4170P.03	Applied Entomology
1992/93FW	BIO3100.02	Current topics
1992/93FW	BIO 4800.06	L. Rosenmeier Research Honours Thesis
1993/94FW	BIO 4800.06	D. Clarke Research Honours Thesis
1993/94W	ENVS 4180	Biodiversity
1994S	ENVS 3900.06	Individual directed study Biology of Rabies x 2
1994/95FW	BIO 4800.08	A. Dzinis Research Honours Thesis
1994S	BIO 3000.02	Field Course - Urban Insect Biodiversity
1994/95F	BIO 4170N.03	Biodiversity
1994/95FW	BIO 4800.08	G. Carman Research Honours Thesis
1995/96F	ENVS 4180	Biodiversity
1995/96W	BIO 4230.04	General Entomology
1996/97FW	ENVS4000	Honours Project x2
1996/97FW	BIO 3100.02	Current topics
1996/97F	BIO 4111.04	Biodiversity
1996/97FW	BIO4800.08	M. Dunn and A. Sugar Honours Theses
1996/97FW	BIO4800.04	M.Nikousefat-Rad Honours Thesis
1998F	BIO 4230.04	General Entomology

1998/99FW	BIO4800.08	J. Janjic Honours Thesis
1999 F	BIO 4230.04	General Entomology
1999 F	BIO 4255.04	Biodiversity
2000	BIO 4800.08	J.Grixti, A. Zayed, M. Sommers, Honours Theses
2001	BIO 4230.04	Entomology
2001	BIO 4255.03	Biodiversity
2001	BIO 3000.02	Field Course (bees and wasps)
2002	BIO 4255.03	Biodiversity
2002	BIO 1010.06	Introductory Biology (Ecology and Evolution Section)
2003	BIO 4800.08	L. Mac Honours Thesis
2003	BIO 4255.03	Biodiversity
2003	BIO 1010.06	Introductory Biology (Ecology and Evolution Section)
2004	BIO 4255.03	Biodiversity
2004	BIO4260.03	Field course (bees and wasps)
2005	BIO4255.03	Biodiversity
2005	BIO4260.03	Systematics
2006	BIO4255.03	Biodiversity
2006	BIO4260.03	Systematics
2006	BIO3000.03	Field course (bees)
2007	BIO4255.03	Biodiversity
2007	BIO4230.04	Entomology
2008	BIO4255.03	Biodiversity
2008	BIO4230.04	Entomology

1b) Graduate Teaching

1989F	BIO 5000	Biology of Bees
1991/92W	BIO 5221B.01	Principles and Practices of Phylogenetic Systematics
1993/94W	BIO 5221B.01	Phylogenetic Systematics
1993F	ENVS 5101	Introduction to Environmental Studies
1993F	ENVS 5112	Ecology in Environmental Studies
1993S	ENVS 7599	Individual directed study x 2 Ecology and Evolution - 1 cu
1994F	ENVS 5112	Ecology in Environmental Studies
1995F	ENVS 5112	Ecology in Environmental Studies
1995S	ENVS 7599	Individual directed study - Urban Ecology – 2 cu's
1995S	ENVS 7599	Individual directed study - Biodiversity - 1 cu
1996W	BIO 5221B.01	Phylogenetics
1996W	BIO 5092.03	Entomology
1996W	ENVS6599	Individual directed study - ecology - 1 cu
1996W	ENVS6599	Individual directed study - sociobiology - 3 cu's
1996F	ENVS5112	Ecology in Environmental Studies
1996F	ENVS6599	Individual directed study - conservation - 1cu
1996F	ENVS6599	Individual directed study - ecological forestry

		-1cu
1998F	BIO 5086	Phylogenetic Systematics
1999F	BIO 5086	Phylogenetic Systematics
2000S	BIO 5334	Social Evolution of Insects
2000W	BIO 5221	Phylogenetics
2001W	BIO 5221	Phylogenetics
2002W	BIO 5XXX	Pollination Biology
2003W	BIO5221	Phylogenetics
2006S	BIO5XXX	Pollination Biology
2008/9	BIO5XXX	Systematics