

## CURRICULUM VITAE

**NAME** Laakso Jouni Tapio

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**PERSONAL**

Born 8<sup>th</sup> June 1967 in Tampere, Finland

Nationality: Finnish

**QUALIFICATIONS**

-**Master of Philosophy** (magna cumlaude approbatur), 7 April 1993, University of Jyväskylä

-**Doctor in Philosophy**, 7.10. 1998 (approved with honours), University of Jyväskylä

-**Adjunct professor ('Docent')**: **1** "Ecology and Environmental Sciences"; Univ. of Jyväskylä, Dept. of Biological and Environmental Sci., (1.4.2004-), and **2** "Ecology"; Univ. of Helsinki, Dept. of Biological and Environmental Sci. (12.2.2004-)

-**Pedagogic training**: University pedagogics "YPEDA 1" (2007) & "YPEDA 2" (2011) in the University of Helsinki (25 credits).

**LANGUAGE PROFICIENCY** in the order of fluency

-Finnish, English, Swedish

**EMPLOYMENT**

1990 Research assistant, University of Jyväskylä, 15.5.-31.8.

1991 Research assistant, University of Jyväskylä, 1.6.-31.8. (financial support by the Academy of Finland )

1992 Research assistant, University of Turku, 1.6.-15.6.

1993 Teacher in ecology field course, University of Jyväskylä, 22.6.-26.6.

Teacher in soil ecology course, University of Helsinki, 28.9.-29.9.

Teaching material writer for The Open College, University of Jyväskylä, 1.10.- 1.11.

1994 Researcher, University of Jyväskylä, 1.1-31.12

Teacher in soil ecology course, University of Helsinki, 28.-29.9.

1995-1998 Researcher, University of Jyväskylä, 1.1.1995-31.1.1998 (financial support by the Academy of Finland), includes lecturing at the university

1998 Researcher, University of Helsinki, 1.4-31.08.

Researcher, University of Helsinki, 1.9-30.10.

Researcher, University of Jyväskylä, 1.11-31.12.

1999-2002 Researcher, Centre of Excellence in Evolutionary Ecology, University of Jyväskylä, 1.1.1999-31.7.-2002

2002–2007 Finnish Academy Postdoctoral Researcher, Integrative Ecology Unit, University of Helsinki (funding from the Academy of Finland 2002–2006), a member of the Nordic Centre of Excellence (“*The dynamics of ecological systems under the influence of climatic variation*”, 2003–2007),

2006–2011 Senior Scientist in the Centre of Excellence in Evolution Research, Jyväskylä

2007–2009 University Lector in theoretical ecology, University of Helsinki (1.9.2007–31.7.2009)

2009–2014 Finnish Academy Research fellow. Principal Investigator, Univ. of Helsinki (1.8.2009–31.3.2014)

**2012–2017 Senior Scientist & PI in the Centre of Excellence in Biological Interactions** (nodes in Univs. of Jyväskylä and Helsinki, and Australian National University, Canberra)

**2014–2017 Professor in Ecology and Evolutionary biology. Univ. of Helsinki.** (1.4.2014–31.3.2017)

## GRANTS AND RESEARCH FUNDING

- 1994 Full-time researcher grant, University of Jyväskylä, 1.1-31.12. 1994 (70 000FIM)  
 1998 Researcher grant, Ella and Georg Ehrnrooth, 1.1.1999 (30 000FIM)  
 2002-2003 Finnish Academy funding for postdoctoral research (84 800€, 2002-2004)  
 2004-2005 Finnish Academy funding for postdoctoral research (110 000€, 2004-2006)  
 2005 University of Helsinki funding for the infrastructure of the experimental evolution laboratory (20 000€)  
 2005-2008 Project funding “Evolution of species interactions in fluctuating environment”, The Academy of Finland (382 000€, 2005-2008)  
 2009-2015 Project funding “Antagonistic species interactions and the evolution of bacterial virulence”, The Academy of Finland (571 000€ in addition to own salary, total 858 427€, 08/2009-01/2015)

## PUBLICATIONS

1. **Laakso J.**, Salminen J., Setälä H., 1995. Effects of abiotic conditions and microarthropod predation on the structure and function of soil animal communities. *Acta Zool. Fenn.* 196: 162-167.
2. Huhta, V., Sulkava, P., **Laakso, J.** 1996. Impact of soil faunal structure on decomposition and N-mineralisation in relation to temperature and moisture in forest soil. *Pedobiologia* 40: 505-513.
3. **Laakso, J.**, Setälä, H. 1997. Nest mounds of wood ants (*Formica aquilonia*): hot spots for litter dwelling earthworms. *Oecologia* 111: 565-569.
4. Setälä, H., **Laakso, J.**, Mikola, J., Huhta, V. 1998. Functional diversity of decomposer organisms in relation to primary production. *Applied Soil Ecology* 9: 25-31.
5. **Laakso, J.**, Setälä, H. 1998. Composition and trophic structure of detrital food web in ant (*Formica aquilonia*) nest mounds and in the surrounding soil. *Oikos* 81: 266-278.
6. **Laakso, J.** 1998. “Sensitivity of ecosystem functioning to changes in the structure of soil food webs” **Thesis**. University of Jyväskylä, 28 p.
7. **Laakso, J.** 1999. Short-term effects of wood ants (*Formica aquilonia* Yarr.) on soil animal community structure. *Soil Biology and Biochemistry* 31: 337-343.
8. **Laakso, J.**, Setälä H. 1999. Sensitivity of primary production to changes in the architecture of belowground food webs. *Oikos* 87: 57-64.
9. **Laakso, J.**, Setälä, H. 1999. Population and ecosystem-level effects of predation on nematodes. *Oecologia* 120: 279-286.
10. Katajisto J., Huhta V., **Laakso J.**, 1999. Plant effects on the soil community: a microcosm experiment. *Eur. J. Soil Biol.* 35: 17-21.
11. **Laakso, J.**, Setälä, H. 2000. Impacts of wood ants (*Formica aquilonia* Yarr.) on the invertebrate food web of boreal forest floor. *Annales Zoologici Fennici* 37: 93-100.
12. **Laakso, J.**, Setälä, H., Palojarvi, A. 2000. Influence of decomposer food web structure and nitrogen availability on plant growth. *Plant and Soil* 225:153-165.
13. Ranta, E., Lundberg, P., Kaitala, V., **Laakso, J.** 2000. Visibility of the environmental noise modulating population dynamics. *Proceedings of the Royal Society B* 267: 1851-1856.

14. Ylikarjula, J., Alaja, S., **Laakso, J.**, Tesar, D. 2000. Effects of patch number and dispersal patterns on population dynamics and synchrony. *Journal of Theoretical Biology* 207:377-387.
15. **Laakso, J.** and Kaitala, V. and Ranta, E. 2001 How does environmental variation translate into biological processes? *Oikos* 92: 119-122.
16. Sulkava, P., Huhta, V., **Laakso, J.**, Gylén, E-R. 2001. Influence of soil fauna and habitat patchiness on plant (*Betula pendula*) growth and carbon dynamics in a microcosm experiment. - *Oecologia* 129: 133-138.
17. **Laakso, J.**, Kaitala, V., Ranta, E. 2003. Nonlinear biological responses to disturbance: consequences on population dynamics. *Ecological Modelling* 162: 247-258.
18. Gårdmark A., Enberg, K., Ripa, J., **Laakso, J.**, Kaitala, V. 2003. The ecology of recovery. *Ann. Zool. Fenn.* 40: 131-144.
19. **Laakso, J.**, Löytynoja, K., Kaitala, V. 2003. Environmental noise and population dynamics of the ciliated protozoa *Tetrahymena thermophila* in aquatic microcosms. *Oikos* 102: 663-671.
20. **Laakso, J.**, Kaitala, V., Ranta, E. 2004. Nonlinear biological responses to disturbance affect population extinction risk. *Oikos* 104: 142-148.
21. Ketola, T., **Laakso, J.**, Kaitala, V., Airaksinen, S. 2004. Evolution of Hsp90 expression in *Tetrahymena thermophila* (Protozoa, Ciliata) populations exposed to thermally variable environment. *Evolution* 58: 741-748.
22. Hiltunen, T., **Laakso, J.**, Kaitala, V. 2006. Interactions between environmental variability and immigration rate control patterns of species diversity. *Ecol. Modell.* 194: 125-131.
23. **Laakso, J.** Kaitala, V., Ranta, E. 2006. Population dynamic consequences of adaptive growth rate in fluctuating environment. *Ecol. Modell.* 194: 132-140.
24. Hiltunen, T., **Laakso, J.**, Kaitala, V., Suomalainen, L.-R., Pekkonen, M. 2008. Temporal variability in resource availability affects diversity of aquatic bacterial communities. *Acta Oecologica* 33: 291-299.
25. Ranta, E., Kaitala, V., Fowler, M.S., **Laakso, J.**, Ruokolainen, L., O'Hara, R. 2008. Detecting compensatory dynamics in competitive communities under environmental forcing. *Oikos* 117: 1907-1911.
26. Ranta, E., Kaitala, V., Fowler, M.S., **Laakso, J.**, Ruokolainen, L. O'Hara, R. 2008. The structure and strength of environmental variation modulate covariance patterns. A reply to Houlahan *et al.* 2008. *Oikos* 117: 1914.
27. Friman, V.-P., Hiltunen, T., **Laakso, J.**, Kaitala, V. 2008. Availability of prey resources drives evolution of predator-prey relationship. *Proc. Roy. Soc. B* 275: 1625-1633.
28. Friman V-P., Hiltunen, T., Lindstedt, C., **Laakso, J.**, Mappes, J. 2009. Predation on multiple trophic levels shapes the evolution of pathogen virulence. *PLoS one* 4(8): e6761.
29. Friman, V-P., **Laakso, J.** 2011 Pulsed resource dynamics constrain the evolution of predator-prey interactions. *American Naturalist* 177(3): 334-345.

30. Friman, V.-P., Hiltunen, T., Jalasvuori, M., Lindstedt, C., Laanto, E., Örmälä, A.-M., **Laakso, J.**, Mappes, J., Bamford, J. 2011 High temperature and parasitic bacteriophages select indirectly bacterial virulence in outside-host-environment. *PLoS One* 6(3): e17651.
31. Pekkonen, M., Korhonen J., **Laakso, J.** 2011. Increased survival during famine improves fitness of bacteria in pulsed resource environment. *Evolutionary Ecology Res.* 13: 1-18.
32. Friman, V.-P., **Laakso, J.** Koivu-Orava, M., Hiltunen, T. 2011. Pulsed-resource dynamics increase the asymmetry of antagonistic coevolution between a predatory protist and a prey bacterium. *JEB* 24: 2563–2573.
33. Hiltunen, T., Friman, V., Kaitala, V., Mappes J., **Laakso, J.** 2012. Predation and resource fluctuations drive eco-evolutionary dynamics of a bacterial community. *Acta Oecologia* 38: 77-83.
34. Zhang, J., Friman V., **Laakso, J.**, Mappes, J. 2012 Interactive effects between diet quality, and host and pathogen genotypes define the severity of infection. *Ecology and Evolution* 2: 2347–2356.
35. Mikonranta, L., Friman, V., **Laakso, J.** 2012. Life history trade-offs and relaxed selection can decrease bacterial virulence in environmental reservoirs. *PLoS ONE* 7(8): e43801.
36. Pekkonen, M., **Laakso, J.** 2012. Temporal changes in species interactions in simple aquatic bacterial communities. *BMC Ecology* 12: 18.
37. Kortet, R., Niemelä, P., Vainikka, A., **Laakso, J.** 2012. Do females prefer males with similar personalities? An analysis of bold ness, mate choice and bacterial resistance in the field cricket *Gryllus integer*. *Evolutionary Parasitology and Immunology* 1: 1-6.
38. Fowler, M., **Laakso, J.**, Kaitala, V., Ruokolainen, L., Ranta, E. 2012. Species dynamics alter diversity-biomass stability relationships. *Ecology Letters* 15: 1387-1392.
39. Merikanto, I., **Laakso, J.**, Kaitala, V. 2012. Outside-host growth of pathogens attenuates epidemiological outbreaks. *PLoS one* 7(11): e50158.
40. Laanto, E., Bamford, J.K.H., **Laakso, J.** Sundberg, L.-R. 2012. Phage-driven loss of virulence in a fish pathogenic bacterium. *PLoS one* 7(12): e53157.
41. Ketola, T., Mikonranta, L., Zhang, J., Saarinen, K., Örmälä, A.-M., Mappes, J., **Laakso, J.** 2013. Fluctuating temperature leads to evolution of thermal generalism and pre-adaptation to novel environments. *Evolution* 67: 2936–2944.
42. Isomaa, M., Kaitala, V., **Laakso, J.** 2013. Baltic cod (*Gadus morhua callaris*) recovery potential under different environment and fishery scenarios. *Ecological Modelling* 266:118-125.
43. Anttila, J., Ruokolainen, L., **Laakso, J.**, Kaitala, V. 2013. Loss of competition in the outside host environment generates outbreaks of environmental opportunist pathogens. *PLoS one* 8(8): e71621.
44. Hiltunen, T., **Laakso, J.** 2013. Relative importance of competition and predation in resource pulse environment - an experimental test with a microbial community. *BMC Ecology* 13:29.
45. Pekkonen, M., Ketola, T., **Laakso, J.** 2013. Resource availability and competition shape the evolution of survival and growth ability in a bacterial community. *PLoS one* 8(9): e76471.
46. Isomaa, M., Kaitala, V., **Laakso, J.** 2014. Precautionary management of Baltic Sea cod (*Gadus morhua callaris*) under different environmental noise and harvesting strategies. *Boreal Environment Research* 19: 39–50.

47. Isomaa, M., Kaitala, V. **Laakso, J.** 2014 Determining the impact of initial age structure on the recovery of a healthy over-harvested population. *Ecological Modelling* 286: 45–52.
48. Zhang, J., **Laakso, J.**, Mappes, J., Laanto, E., Ketola, T., Bamford, J.K.H., Kunttu, H., Sundberg, L-R. 2014. Association of colony morphotype on virulence, growth and resistance against protozoan predation in the fish pathogen *Flavobacterium columnare*. *FEMS microbiology* 89(3): 553-62.
49. Zhang, J. Örmälä A-M., Mappes, J., **Laakso, J.** 2014. Top-down effects of a lytic bacteriophage and protozoa on bacteria in aqueous and biofilm phases. *Ecology and Evolution*. doi:10.1002/ece3.1302.
50. Zhang, J., Ketola, T., Örmälä A-M., Mappes, J. **Laakso, J.** 2014. Coincidental loss of bacterial virulence in multi enemy communities. *PLoS one* 9(11): e111871
51. Merikanto, I., **Laakso, J.**, Kaitala, V. 2014. Invasion ability and disease dynamics of environmental opportunistic pathogens under outside-host competition. *PLoS one* 2014 9(11): e113436
52. Örmälä-Odegrip, A-M., Ojala, V., Hiltunen, T., Zhang, J., Bamford, J.K.H., **Laakso, J.** 2015. Protist predation can select for bacteria with lowered susceptibility to infection by lytic phages. *BMC Evolutionary Biology* 15:81. DOI 10.1186/s12862-015-0341-1
53. Mikonranta, L., Ketola, T., A-M., Mappes, J., **Laakso, J.** 2015 Within-host evolution decreases virulence in an opportunistic bacterial pathogen. *BMC Evolutionary Biology*. Accepted 07/2015
54. Anttila, J. Ruokolainen, L., **Laakso, J.** 2015 Environmental variation enables environmental opportunist pathogen invasions. *Oikos accepted 10/2015*
55. Ketola T., Mikonranta L., **Laakso J.** & Mappes J. 2015. Different food sources elicit fast changes to bacterial virulence. *Biology Letters accepted 12/2015*.
56. Anttila, J. Kaitala, V. **Laakso, J.**, Ruokolainen, L. 2015 Environmental variation generates environmental opportunist pathogen outbreaks. *PLoS one accepted 12/2015*

Citation metrics according to Google Scholar:

<b>Citation indices</b>	All	Since 2010
<u>Citations</u>	1448	716
<u>h-index</u>	23	17
<u>i10-index</u>	33	25

## COMPUTER PROGRAMS AND PROTOTYPES

1991-1997: Development of various microcosm systems integrated with automated CO<sub>2</sub> measurement system.

2000-2002: Image analysis software for automated counting and identification of microbes.

2003-2005: Chemostat microcosm system and Matlab-based controller application.

2005-2006: Matlab-based graphical interface for rapid counting and classification of microbial colonies from digitised images of agar plates.

## RESPONSIBLE SUPERVISION OF STUDENTS:

(\* = includes theoretical work )

1. Juha Katajisto 1998 (**MSc thesis**), University of Jyväskylä, Finland 1998: "Feed-back effects in soil: influence of NPP on the decomposer community and its activity".
2. Katja Löytynoja 2001 (**MSc thesis**), University of Jyväskylä, Finland. 2001: "Environmental noise and population dynamics of Ciliated protozoa *Tetrahymena thermophila*".
3. \*Teppo Hiltunen 2002 (**MSc thesis**), University of Jyväskylä, Finland. 2002: "Competitive interactions in stochastic environments".
4. Tarmo Ketola 2002 (**MSc thesis**), University of Jyväskylä, Finland. 2002: "Evolution of thermotolerance in *Tetrahymena thermophila*".
5. Ville Friman 2005 (**MSc thesis**), University of Jyväskylä, Finland. 2005: "Prey resource availability and evolution of predator-prey interactions".
6. Minna Pekkonen 2013 (**PhD thesis**). University of Helsinki, Finland. 2005-2013: "Evolution of competitive interactions in fluctuating environments". (*maternity leave 2011*)
7. \*Teppo Hiltunen 2008 (**PhD thesis**, co-supervised with V. Kaitala), University of Jyväskylä, Finland. 2008: "Environmental fluctuations and predation modulate community dynamics and diversity".
8. Ville Friman 2009 (**PhD thesis**). University of Helsinki, Finland. 2009: "Evolution of predator-prey interaction in fluctuating environments".
9. Maija Koivu (Koivu-Orava) 2010 (**MSc thesis**, co-supervised by V-P Friman), University of Jyväskylä, Finland. 2005-2010: "Temporally fluctuating resource availability and evolution of predator-prey interactions".
10. Jenni Korhonen 2011 (**MSc thesis**), University of Helsinki, Finland. 2007-04/2009. "Evolution of competitive interactions in periodic environment".
11. \*Tarmo Ketola 2009 (**Post doctoral mentoring**), Univ. of Jyväskylä, 01/2009-31.12.2011 "Evolutionary consequences of environmental variability and genetic stress".
12. Lauri Mikonranta 2010 (**MSc thesis**, co-supervised with V. Friman), University of Jyväskylä 12/2008-06/2010 "Predation-induced changes in *Serratia marcescens* virulence". Grade: "Eximia"
13. Ville Ojala 2011 (**MSc thesis**, co-supervised with Jaana Bamford, Anni-Maria Örmälä) University of Jyväskylä 05/2010-11/2011. "Phage-bacteria antagonistic coevolution is influenced by protozoan predation". Grade: "Eximia".
14. \*Ilona Merikanto 2012 (**MSc thesis**, co-supervised with Veijo Kaitala), University of Helsinki 12/2010-. "Ecological interactions in the evolution of virulence and in disease dynamics among opportunistic pathogens". (1/2011-1/2012). Grade: "Magna Cum Laude"
15. Ji Zhang, MD 2013 (**PhD thesis**, co-supervised with Johanna Mappes and Tarmo Ketola), University of Jyväskylä, Finland. 04/ 2008-04/2013 "Impact of biotic and abiotic factors on bacterial virulence".
16. \*Marleena Isomaa 2015 (**PhD thesis**, co-supervised with V. Kaitala), Univ. of Helsinki, 09/2008-04/2015 "Management of Atlantic cod (*Gadus morhua*) and salmon (*Salmo salar*) populations"
17. Anni-Maria Örmälä-Odegrip 2015 (**PhD thesis**, co-supervised with Jaana Bamford), University of Jyväskylä & Helsinki 08/2009-10.04/2015 "Implications of bacterial viruses on pathogenic bacteria: from natural microbial communities to therapeutic applications". (*Maternal leave 11/2012-11/2013*).
18. Lauri Mikonranta 2015 (**PhD thesis**, co-supervised with Johanna Mappes and Tarmo Ketola), University of Jyväskylä 06/2010-02/2015 "Pathogen-host interactions between an environmentally transmitted bacterium *Serratia marcescens* and its insect hosts".

19. \*Jani Anttila 2015 (**PhD thesis**, co-supervised with Veijo Kaitala and Lasse Ruokolainen), University of Helsinki 04/2011-29.05/2015. “Mathematical models of environmental opportunist pathogen dynamics“.
20. \*Mikael Linden (**MSc thesis**, co-supervised with Lasse Ruokolainen, Jani Anttila), University of Helsinki 10/2011-. “Modelling ecological and evolutionary dynamics of opportunist pathogens and their parasitic phages”. (*Under construction, expected completion 2015*).
21. \*Ilona Merikanto (**PhD thesis**, co-supervised with Veijo Kaitala), University of Helsinki 1/2012-. “Modelling ecological and evolutionary dynamics of opportunist pathogens”. (*Under construction, expected completion 2015*).
22. Kati Saarinen (**PhD thesis**, co-supervised with Tarmo Ketola, Leena Lindström), University of Jyväskylä, 2012-. “Disturbance, generalism and invasiveness: Experimental evolution tests with bacteria” (*Under construction, expected completion 2015*).
23. Janina Keskiniva (**MSc thesis**, co-supervised with Juha Mikola and Heikki Helanterä). “Is silver birch growth and nitrogen allocation affected by kin recognition?” (*Under construction, expected completion 2015*).
24. Sanna Torvinen (**MSc thesis**, co-supervised with Juha Mikola and Heikki Helanterä). “Is silver birch herbivory affected by kin recognition?” (*Under construction, expected completion 2015*).

**REFEREE in Journals:**

African Journal of Agricultural Research (2009-),  
Atmospheric Environment (2002-),  
Biological Reviews (2009-),  
Biology Letters (2006-),  
BMC Microbiology (2014-)  
Ecography (1998-),  
Ecology (2005-),  
Ecological Modelling (2004-),  
Ecology Letters (2002-),  
Evolution (2012-)  
Functional Ecology (2004-),  
Journal of Animal Ecology (2005-),  
Journal of Theoretical Biology (2010-),  
Journal of Theoretical Population Biology (2004-),  
Microbial Ecology (2012-),  
Oikos (1998-),  
Pakistanian Journal of Scientific and Industrial Research (2002-),  
PLoS ONE (2014-),  
Proceedings of the Royal Society, Biological Sciences (2008-).  
Trends in Microbiology (2015-)

**Founder member of the *Peerage of Science*** ([www.peerageofscience.org](http://www.peerageofscience.org))

**Research proposals:**

England, Natural Environmental Research Council (2001),



Finnish Academy evaluator for international research proposals (2005-),  
Lithuania, Ministry of Education (2009)  
Estonia, Ministry of Education (2012)

**Vice member of the steering group in the Finnish Doctoral programme** in wildlife biology  
research (LUOVA) 2014-

