

Julkaisut vuonna 2001 – Publications in 2001

Väitöskirjat/Doctoral dissertations

Henriksson, J. 2001: Causes and consequences of modularity: implications for plants, herbivores, and plant-herbivore interactions. – Doc. thesis, Annales Universitatis Turkuensis, AII,145, 80 pp. (5 original papers).

Gross, J. 2001: On the evolution of host plant specialization in leaf beetles (Coleoptera: Chrysomelina). – Doc. thesis, Freie Universität Berlin, Germany.

Muut julkaisut/Other publications

Ahlholm, J., Saikkonen, K., Helander, M., Wäli, P. & Vuorikoski, H. 2001: Transmission mode and genetic diversity of endophytes. – In: Paul, V.H. & Dapprich, P.D. (eds). Proceedings for the 4th International *Neotyphodioum*/Grass Interactions Symposium. Fachbereich Agrarwirtschaft, Soest, Germany.

Alonso, C. 2001: Is plant chemistry determining mortality and dispersal of young *Epirrita autumnata* larvae? – *Skógræktarritid* 2001, 1. Tbl.: 175-179.

Alonso, C., Ruohomäki, K., Riipi, M. & Henriksson, J. 2001: Testing for prerequisites of local adaptation in an insect herbivore, *Epirrita autumnata*. – *Ecoscience* 8: 26-31.

Aurela, M., Tuovinen, J.-P. & Laurila, T. 2001: Net CO₂ exchange of a subarctic mountain birch ecosystem. – *Theoretical and Applied Climatology* 70(1-4): 135-148. doi: 10.1007/s007040170011

Harding, R.J., Gryning, S.-E., Haldin, S. & Lloyd, R.R. 2001: Progress in understanding of land surface/atmosphere exchanges at high latitudes. – *Theoretical and Applied Climatology* 70(1-4): 5-18. doi: 10.1007/s007040170002

Hargreaves, K.J., Fowler, D., Pitcairn, C.E.R. & Aurela, M. 2001: Annual methane emission from Finnish mires estimated from eddy covariance campaign measurements. – *Theoretical and Applied Climatology* 70(1-4): 203-213. doi: 10.1007/s007040170015

Henriksson, J. 2001: Differential shading of branches or whole trees: survival, growth, and reproduction. – *Oecologia* 126(4): 482-486. doi: 10.1007/s00440000547

Henttonen, H. & Wallgren, H. 2001: Rodent dynamics and communities in the birch forest zone of northern Fennoscandia. – In: Wielgolaski, F.E. (ed.). *Nordic Mountain Birch Ecosystems. Man and the Biosphere Series, Vol. 27.* UNESCO, Paris and Parthenon Publishing, Carnforth. pp. 261-278.

Kause, A. & Morin, J.-P. 2001: Seasonality and genetic architecture of development time and body size of the birch feeding sawfly *Priophorus pallipes*. – *Genetical Research* 78(1): 31-41. doi.org/10.1017/S0016672301005171

Kause, A., Saloniemi, I., Morin, J.-P., Haukioja, E., Hanhimäki, S. & Ruohomäki, K. 2001: Seasonally varying diet quality and the quantitative genetics of development time and body size in birch feeding insects. – *Evolution* 55(10): 1992-2001. doi: 10.1111/j.0014-3820.2001.tb01316.x

- Koponen, S., Relys, V. & Dapkus, D. 2001: Changes in structure of ground-living spider (Araneae) communities on peatbogs along a transect from Lithuania to Lapland. – *Norwegian Journal of Entomology* 48(1): 167-174
- Kurka, A.-M. 2001: The use of cellulose strips to study organic matter decomposition in boreal forested soils. - *Boreal Environment Research* 6(1): 9-17.
- Kurka, A.-M., Starr, M., Heikinheimo, M. & Salkinoja-Salonen, M. 2000: Decomposition of cellulose strips in relation to climate, litterfall nitrogen, phosphorus and C/N ratio in natural boreal forests. – *Plant and Soil* 219(1-2): 91-101. doi: 10.1023/A:1004788327255
- Kurka, A.-M., Starr, M., Karsisto, M. & Salkinoja-Salonen, M. 2001: Relationship between decomposition of cellulose strips and chemical properties of humus layer in natural boreal forests. – *Plant and Soil* 229(1): 137-146. doi: 10.1023/A:1004887819813
- Laurila, T., Soegaard, H., Lloyd, C.R., Aurela, M., Tuovinen, J.-P. & Nordström, C. 2001: Seasonal variations of net CO₂ exchange in European arctic ecosystems. – *Theoretical and Applied Climatology* 70(1-4): 183-201. doi: 10.1007/s007040170014
- Lempa, K., Lojonen, J., Ossipov, V., Ossipova, S. & Pihlaja, K. 2001: Delayed greening of mountain birch leaves: Ecological and chemical correlates. – *Ecoscience* 8: 68-75.
- Lloyd, C.R., Harding, R.J., Friberg, T. and Aurela, M. 2001: Surface fluxes of heat and water vapour from sites in the European Arctic. – *Theoretical and Applied Climatology* 70(1-4): 19-33. doi: 10.1007/s007040170003
- Lojonen, J., Lempa, K., Ossipov, V., Kozlov, M.V., Girs, A., Hangasmaa, K., Haukioja, E. & Pihlaja, K. 2001: Patterns in content of phenolic compounds in leaves of mountain birch along a strong pollution gradient. – *Chemosphere* 45(3): 291-301. doi.org/10.1016/S0045-6535(00)00545-2
- Martel, J., Hanhimäki, S., Kauser, A. & Haukioja, E. 2001: Diversity of birch sawfly responses to seasonally atypical diets. – *Entomologia Experimentalis et Applicata* 100(3): 301-309. doi: 10.1046/j.1570-7458.2001.00877.x
- Mäenpää, E., Skre, O., Malila, E., Partanen, R., Wielgolaski, F.E. & Laine, K. 2001: Carbon economy in birch-dominated ecosystem species in northern Fennoscandia. – In: Wielgolaski, F.E. (ed.). *Nordic Mountain Birch Ecosystems. Man and the Biosphere Series, Vol. 27.* UNESCO, Paris and Parthenon Publishing, Carnforth. pp. 93-114.
- Neuvonen, S., Ruohomäki, K., Bylund, H. & Kaitaniemi, P. 2001: Insect herbivores and herbivory effects on mountain birch dynamics. – In: Wielgolaski, F.E. (ed.). *Nordic Mountain Birch Ecosystems. Man and the Biosphere Series, Vol. 27.* UNESCO, Paris and Parthenon Publishing, Carnforth. pp. 207-222.
- Neuvonen, S. 2001: Pollution induced changes in mountain birch forests. – In: Wielgolaski, F.E. (ed.). *Nordic Mountain Birch Ecosystems. Man and the Biosphere Series, Vol. 27.* UNESCO, Paris and Parthenon Publishing, Carnforth. pp. 331-342.

Ossipov, V., Haukioja, E., Ossipova, S., Hanhimäki, S. & Pihlaja, K. 2001: Phenolic and phenolic-related factors as determinants of suitability of mountain birch leaves to an herbivorous insect. – *Biochemical Systematics and Ecology* 29(3): 223-240. doi.org/10.1016/S0305-1978(00)00069-7

Ossipova, S., Ossipov, V., Haukioja, E., Lojonen, J. & Pihlaja, K. 2001: Proanthocyanidins of mountain birch leaves: quantification and properties. – *Phytochemical Analysis* 12(2): 128-133. doi: 10.1002/pca.568

Partanen, R., Wielgolaski, F.E., Malila, E., Mäenpää, E. & Laine, K. 2001: Inorganic nutrient content in plant species of a mountain birch-dominated ecosystem in northern Fennoscandia. – In: Wielgolaski, F.E. (ed.). *Nordic Mountain Birch Ecosystems. Man and the Biosphere Series, Vol. 27.* UNESCO, Paris and Parthenon Publishing, Carnforth. pp. 155-171.

Salminen, J.-P., Ossipov, V., Haukioja, E. & Pihlaja, K. 2001: Seasonal variation in the content of hydrolysable tannins in leaves of *Betula pubescens*. – *Phytochemistry* 57(1): 15-22. doi: doi.org/10.1016/S0031-9422(00)00502-1

Tammaru, T., Tanhuanpää, M., Ruohomäki, K. & Vanatoa, A. 2001: Autumnal moth - why autumnal? – *Ecological Entomology* 26(6): 646-654. doi: 10.1046/j.1365-2311.2001.00363.x

Thórsson, Wäli, P., Saikkonen, K., Helander, M., Ahlholm, J., Lehtimäki, S. & Niemeläinen, O. 2001: Seed transmitted endophytic fungi in wild grass populations in Finland. – In: Paul, V.H. & Dapprich, P.D. (eds). *Proceedings for the 4th International Neotyphodioum/Grass Interactions Symposium.* Fachbereich Agrarwirtschaft, Soest, Germany.

Julkaisut vuonna 2002 – Publications in 2002

Väitöskirjat/Doctoral theses

Dankers, R. 2002: Sub-arctic hydrology and climate change. A case study of the Tana River Basin in Northern Fennoscandia. – Doc. thesis, Netherlands Geographical Studies 304. Faculty of Geographical Sciences, Utrecht University. Labor Grafimedia b.v., Utrecht. 237 pp.

Pro gradu -tutkielmat/Master's theses

Kivinen, S. 2002: Kasvillisuustyypien levinneisyyden mallintaminen ja malleihin vaikuttavat tekijät: esimerkkinä Kevon luonnonpuiston suot ja kosteat metsät. – M. Sc. thesis, Department of Geography, University of Turku. 95 + 22 pp.

Kukkonen, T. 2002: Tunturikoivikoiden elpyminen tunturimittarin aiheuttamista tuhoista Kevon luonnonpuistossa. – M. Sc. thesis, Department of Geography, University of Turku. 131 + 3 pp.

Muut julkaisut/Other publications

Ahlholm, J., Helander, M., Elamo, P., Saloniemi, I., Neuvonen, S., Hanhimäki, S. & Saikkonen, K. 2002: Micro-fungi and invertebrate herbivores on birch trees: fungal mediated plant-herbivore interactions or responses to host quality? – *Ecology Letters* 5(5): 648-655. doi: 10.1046/j.1461-0248.2002.00368.x

- Ahlholm, J.U., Helander, M., Henriksson, J., Metzler, M. & Saikkonen, K. 2002: Environmental conditions and host genotype direct genetic diversity of *Venturia ditricha*, a fungal endophyte of birch trees. – *Evolution* 56(8): 1566-1573. doi: 10.1111/j.0014-3820.2002.tb01468.x
- Anttonen, S., Piispanen, R., Ovaska, J., Mutikainen, P., Saranpää, P. & Vapaavuori, E. 2002: Effects of defoliation on growth, biomass allocation, and wood properties of *Betula pendula* clones grown at different nutrient levels. – *Canadian Journal of Forest Research* 32(3): 498-508. doi: 10.1139/X01-217
- Bowers, D. 2002: Was the 16 August 1997 seismic disturbance near Novaya Zemlya an earthquake? – *Bulletin of the Seismological Society of America* 92(6): 2400-2409. doi: 10.1785/0120020012
- Eeva, T., Lehtikoinen, E., Rönkä, M., Lummaa, V. & Currie, D. 2002: Different responses to cold weather in two pied flycatcher populations. – *Ecography* 25(6): 705-713. doi: 10.1034/j.1600-0587.2002.250606.x
- Emberlin, J., Detandt, M., Gehrig, R., Jaeger, S., Nolard, N. & Rantio-Lehtimäki, A. 2002: Responses in the start of *Betula* (birch) pollen seasons to recent changes in spring temperatures across Europe. – *International Journal of Biometeorology* 46(4): 159-170. doi: 10.1007/s00484-002-0139-x
- Harding, R.J., Jackson, N.A., Blyth, E.M. & Culf, A. 2002: Evaporation and energy balance of a sub-Arctic hillslope in northern Finland. – *Hydrological Processes* 16(7): 1419-1436. doi: 10.1002/hyp.353
- Heino, S. 2002: Cajanderin jalanjäljillä. – *Virmolainen* (2002): 16-18.
- Juntunen, V., Neuvonen, S., Norokorpi, Y. & Tasanen, T. 2002: Potential for timberline advance in northern Finland, as revealed by monitoring during 1983-99. – *Arctic* 55(4): 348-361.
- Klemola, T., Tanhuanpää, M., Korpimäki, E. & Ruohomäki, K. 2002: Specialist and generalist natural enemies as an explanation for geographical gradients in population cycles of northern herbivores. – *Oikos* 99(1): 83-94. doi: 10.1034/j.1600-0706.2002.990109.x
- Kokko A., Mäkelä, K. & Tuominen, S. 2001: Runkoepifyyttiseuranta Suomen ympäristön yhdennetyn seurannan alueilla vuosina 1988-1998. – Suomen ympäristö 476. Suomen ympäristökeskus. Oy Edita Ab, Helsinki. 82 pp.
- Koponen, S. 2002: Ground-living spiders in bogs in northern Europe. – *Journal of Arachnology* 30(2):
- Kytöviita, M.-M. & Crittenden, P.D. 2002: Seasonal variation in growth rate in *Stereocaulon paschale*. – *The Lichenologist* 34(6): 533-537. doi: 10.1006/lich.2002.0422
- Luoto, M. & Seppälä, M. 2002: Modelling the distribution of Palsas in Finnish Lapland with logistic regression and GIS. – *Permafrost and Periglacial Processes* 13(1): 17-28. doi: 10.1002/ppp.404
- Martel, J. & Kause, A. 2002: The phenological window of opportunity for early-season birch sawflies. – *Ecological Entomology* 27(3): 302-307. doi: 10.1046/j.1365-3211.2002.00418.x

- Mutikainen, P., Walls, M., Ovaska, J., Keinänen, M., Julkunen-Tiitto, R., Vapaavuori, E. 2002: Costs of herbivore resistance in clonal saplings of *Betula pendula*. – *Oecologia* 133(3): 364-371. doi: 10.1007/s00442-002-1021-6
- Mäkinen, Y. 2002: Floristic observations in western Kola Peninsula, NW Russia. – *Kevo Notes* 12: 1-33.
- Parantainen, A. & Pulkkinen, P. 2002: Pollen viability of Scots pine (*Pinus sylvestris*) in different temperature conditions: high levels of variation among and within latitudes. – *Forest Ecology and Management* 167(1-3): 149-160. doi.org/10.1016/S0378-1127(01)00722-8
- Pehkonen, T., Ranta, H., Tolvanen, A. & Laine, K. 2002: The frequency of the fungal pathogen *Exobasidium splendidum* in two natural stands of the host *Vaccinium vitis-idaea* in the subarctic timberline area. – *Arctic, Antarctic, and Alpine Research* 34(4): 428-433. doi: 10.2307/1552200
- Riipi, M., Ossipov, V., Lempa, K., Haukioja, E., Koricheva, J., Ossipova, S. & Pihlaja, K. 2002: Seasonal changes in birch leaf chemistry: are there trade-offs between leaf growth and accumulation of phenolics. – *Oecologia* 130(3): 380-390. doi: 10.1007/s00442-001-0826-z
- Seppälä, M. 2002: Relief control of summer wind direction and velocity: a case study from Finnish Lapland. – *Norwegian Journal of Geography* 56: 117-121.
- Van Vliet-Lanoë, B. & Seppälä, M. 2002: Stratigraphy, age and formation of peaty earth hummocks (pounus), Finnish Lapland. – *Holocene* 12: 187-199. doi: 10.1191/0959683602h1534rp

Julkaisut vuonna 2003 - Publications in 2003

Väitöskirjat/Doctoral dissertations

- Ahlholm, J. 2003: Responses of foliar fungi and herbivores to host plant genotype and environmental conditions. – Doc. thesis, *Annales Universitatis Turkuensis A II* 161. 40 pp. + 5 articles.
- Gret, A. A. 2003: Time-lapse monitoring with coda wave interferometry. – Doc. thesis, Center for Wave Phenomena, Colorado School of Mines, Golden, Colorado. 104 pp.
- den Herder, M. 2003: Impacts of ungulates in boreal forest and subarctic tundra ecosystems in Finland. – Doc. thesis, Faculty of Forestry, University of Joensuu. 38 pp. + 4 articles.
- Heikkinen, J. E.P. 2003: Carbon balance of the arctic wetlands in Europe. – Doc. thesis, Kuopio University Publications C, Natural and Environmental Sciences 153. 34 pp. + 5 articles.
- Nykänen H. 2003: Sensitivity of CH₄ and N₂O dynamics in boreal peatlands to anthropogenic and global changes. – Doc. thesis, Kuopio University Publications C, Natural and Environmental Sciences 164. 34 pp. + ? articles.

Parantainen, A. 2003: The functionability of pollen and the effect of pollen source on seed maturation in *Pinus sylvestris* L.. – Doc. thesis, Annales Universitatis Turkuensis A II 162. 18 pp. + 5 articles.

Yli-Tuomi, T. 2003: Changes in the concentration and composition of anthropogenic and biogenic aerosols in the Finnish Arctic. – Doc. thesis, Clarkson University, Potsdam, New York, USA.

Pro gradu -tutkielmat/Master's theses

Salminen, P. 2003: Pitkäkestoisen saastealtistuksen vaikutus tunturikoivun (*Betula pubescens* ssp. *czerepanovii*) fenologiaan ja kasvuun. – M. Sc. thesis, Department of Biology, University of Turku. 55 + 3 pp.

Tiilikainen, K. 2003: Subarktisen palsasuon metaanipäästöt. – M. Sc. thesis, Department of Environmental Sciences, University of Kuopio. 69 pp. + 1 app.

Muut julkaisut/Other publications

Asikainen, E. & Mutikainen, P. 2003: Female frequency and relative fitness of females and hermaphrodites in gynodioecious *Geranium sylvaticum* (Geraniaceae). – American Journal of Botany 90(2): 226-234. Stable URL: <http://www.jstor.org/stable/4124177>

Basunia, M.S., Landsberger, S., Yli-Tuomi, T., Hopke, P.K., Wishinski, P., Paatero, J. & Viisanen, Y. 2003: Ambient silver concentration anomaly in the Finnish Arctic lower atmosphere. – Environmental Science & Technology 37(24): 5537-5544. doi: 10.1021/es034004q

Haukioja, E. 2003: Putting the insect into the birch-insect interaction. – Oecologia 136(2): 161-168. doi: 10.1007/s00442-003-1238-z

Henriksson, J., Haukioja, E., Ossipov, V., Ossipova, S., Sillanpää, S., Kapari, L. & Pihlaja, K. 2003: Effects of host shading on consumption and growth of the geometrid *Epirrita autumnata*: interactive roles of water, primary and secondary compounds. – Oikos 103(1): 3-16. doi: 10.1034/j.1600-0706.2003.12306.x

den Herder, M., Kytöviita, M.-M. & Niemelä, P. 2003: Growth of reindeer lichens and effects of reindeer grazing on ground cover vegetation in a Scots pine forest and a subarctic heathland in Finnish Lapland. – Ecography 26(1): 3-12. doi: 10.1034/j.1600-0587.2003.03211.x

den Herder, M. & Niemelä, P. 2003: Effects of reindeer on the re-establishment of *Betula pubescens* subsp. *czerepanovii* and *Salix phylicifolia* in a subarctic meadow. – Rangifer 23(1): 3-12. doi.org/10.7557/2.23.1.308

Hjort, J. & Seppälä, M. 2003: Topographical properties of active and inactive patterned grounds in Finnish Lapland. – 8th International Conference on Permafrost. Extended Abstracts on Current Research and Newly Available Information. pp. 63-64.

Holtmeier, F.-K. 2003: Mountain timberlines. Ecology, patchiness, and dynamics. – In: Advances in Global Change Research 14: 369. Dordrecht, Boston, London.

Holtmeier, F.-K., Broll, G., Mütterthies, A. & Anschlag, K. 2003: Regeneration of trees in the treeline ecotone: northern Finnish Lapland. – Fennia 181(2): 103-128.

- Kaitaniemi, P. & Ruohomäki, K. 2003: Factors controlling resource allocation in mountain birch. – *Perspectives in Plant Ecology, Evolution and Systematics* 5(4): 231-249. doi.org/10.1078/1433-8319-00037
- Karlsson, P. S., Bylund, H., Neuvonen, S., Heino, S. & Tjus, M. 2003: Climatic response of budburst in the mountain birch at two areas in northern Fennoscandia and possible responses to global change. – *Ecography* 26(5): 617-625. doi: 10.1034/j.1600-0587.2003.03607.x
- Klemola, T., Hanhimäki, S., Ruohomäki, K., Senn, J., Tanhuanpää, M., Kaitaniemi, P., Ranta, H. & Haukioja, E. 2003: Performance of the cyclic autumnal moth, *Epirrita autumnata*, in relation to birch mast seeding. – *Oecologia* 135(3): 354-361. doi: 10.1007/s00442-003-1194-7
- Lange, M., Callaghan, T., Harding, R., Koster, E., Kozlov, M., Kuhry, P., Mariussen, Å., Rees, G., Skjoldal, H., Slagstad, D., Streit, U., Vitebsky, P., Wassmann, P. & Wiberg, U. 2003: The Barents Sea impact study (BASIS): methodology and first results. – *Continental Shelf Research* 23(17-19): 1673-1694. doi.org/10.1016/j.csr.2002.12.002
- Loponen, J., Sinkkonen, A., Uusitalo, M. & Pihlaja, K. 2003: Identification of plant phenolic compounds as allelopathic agents in litter of Northern plants. – In: Honkanen, J.O. & Koponen, P.S. (eds.): *Proceedings of the Sixth Finnish Conference of Environmental Sciences: Current Perspectives in Environmental Science and Technology*. Joensuu University. Joensuu, Finland. pp. 360-363.
- Luoto, M. & Seppälä, M. 2003: Thermokarst ponds as indicators of the former distribution of palsas in Finnish Lapland. – *Permafrost and Periglacial Processes* 14(1): 19-27. doi: 10.1002/ppp.441
- Luoto, M. & Seppälä, M. 2003: New extensive sporadic permafrost feature in Finnish Lapland: peaty earth hummocks (pounus). – In: Phillips M., Springman, S. & Arenson, L. (eds.): *Proceedings of the eight international conference on permafrost, 21-25 July 2003, Zurich, Switzerland*. Vol 2: 703-705.
- Martin, L. & Martin, J. 2003: Epiphytic lichens diversity and chemistry in Scots pine forest along the transect from Northern Finland to Southern Poland. – *Polish Journal of Ecology* 51(4): 507-511.
- McCarroll, D., Jalkanen, R., Hicks, S., Tuovinen, M., Gagen, M., Pawellek, F., Eckstein, D., Schmitt, U., Autio, J. & Heikkinen, O. 2003: Multiproxy dendroclimatology: a pilot study in northern Finland. – *The Holocene* 13(6): 829-838.
- Ottmøller, L. & Midzi, V. 2003: The crustal structure of Norway from inversion of teleseismic receiver functions. – *Journal of Seismology* 7(1): 35-48. doi: 10.1023/A:1021294504092
- Nykänen, H., Heikkinen, J.E.P., Pirinen, L., Tiilikainen, K. & Martikainen, P.J. 2003: Annual CO₂ exchange and CH₄ fluxes on a subarctic palsa mire during climatically different years. – *Global Biogeochemical Cycles* 17: 1-18.
- Riihimäki, J., Kaitaniemi, P. & Ruohomäki, K. 2003: Spatial responses of two herbivore groups to a geometrid larva on mountain birch. – *Oecologia* 134(2): 203-209. doi: 10.1007/s00442-002-1082-6

- Ruoho-Airola, T., Alaviippola, B., Salminen, K. & Varjoranta, R. 2003: An investigation of base cation deposition in Finland. – *Boreal Environment Research* 8(1): 83-95.
- Ruohomäki, K., Klemola, T., Kaitaniemi, P. & Käär, M. 2003: Crowding-induced responses in a geometrid moth revisited: a field experiment. – *Oikos* 103(3): 489-496. doi: 10.1034/j.1600-0706.2003.12778.x
- Ruuhola, T., Ossipov, V., Lempa, K. & Haukioja, E. 2003: Amino acids during development of mountain birch leaves. – *Chemoecology* 13(2): 95-101. doi: 10.1007/s00049-003-0232-6
- Rönkkö, M. & Seppälä, M. 2003: Surface characteristics affecting active layer formation in palsas, Finnish Lapland. – In: Phillips M., Springman, S. & Arenson, L. (eds.): *Proceedings of the eight international conference on permafrost, 21-25 July 2003, Zurich, Switzerland*. Vol 2: 995-1000.
- Seppälä, M. 2003: Surface abrasion of palsas by wind action in Finnish Lapland. – *Geomorphology* 52(1-2): 141-148. doi.org/10.1016/S0169-555X(02)00254-4
- Seppälä, M. 2003: An experimental climate change study of the effect of increasing snow cover on active layer of a palsa, Finnish Lapland. – In: Phillips M., Springman, S. & Arenson, L. (eds.): *Proceedings of the eight international conference on permafrost, 21-25 July 2003, Zurich, Switzerland*. Vol 2: 1013-1016.
- Sinkkonen, A. 2003: A model describing chemical interference caused by decomposing residues at different densities of growing plants. – *Plant Soil* 250: 315-322.
- Suominen, O., Niemelä, J., Martikainen, P., Niemelä, P. & Kojola, I. 2003: Impact of reindeer grazing on ground-dwelling Carabidae and Curculionidae assemblages in Lapland. – *Ecography* 26(4): 503-513. doi: 10.1034/j.1600-0587.2003.03445.x
- Tanhuanpää, M., Ruohomäki, K. & Kaitaniemi, P. 2003: Influence of adult and egg predation on reproductive success of *Epirrita autumnata* (Lepidoptera: Geometridae). – *Oikos* 102(2): 263-272. doi: 10.1034/j.1600-0706.2003.12546.x
- Valkama, E., Salminen, J.-P., Koricheva, J. & Pihlaja, K. 2003: Comparative analysis of leaf trichome structure and composition of epicuticular flavonoids in Finnish birch species. – *Annals of Botany* 91(6): 643-655. doi: 10.1093/aob/mcg070
- Yli-Tuomi, T., Hopke P. K., Paatero, P., Basunia, M.S., Landsberger, S., Viisanen, Y. & Paatero, J. 2003: Atmospheric aerosol over Finnish Arctic: source analysis by the multilinear engine and the potential source contribution function. – *Atmospheric Environment* 37(31): 4381-4392. doi.org/10.1016/S1352-2310(03)00569-7
- Yli-Tuomi, T., Venditte, L., Hopke P. K., Basunia, M. S., Landsberger, S., Viisanen, Y. & Paatero, J. 2003: Composition of the Finnish Arctic aerosol: collection and analysis of historic filter samples. – *Atmospheric Environment* 37(17): 2355-2364. doi.org/10.1016/S1352-2310(03)00164-X

Julkaisut vuonna 2004 – Publications in 2004

Väitöskirjat/Doctoral dissertations

Asikainen, E. 2004: Maintenance of Gynodioecy in *Geranium sylvaticum*. – Doc. thesis, Annales Universitatis Turkuensis, A II 174. 122 pp.

Riipi, M. 2004: Temporal Variation and Trade-offs in Mountain Birch Leaf Chemistry and Resistance to Herbivores. – Doc. thesis, Annales Universitatis Turkuensis, A II 177, 126 pp., Turku.

Ruoho-Airola, T. 2004: Temporal and regional patterns of atmospheric components affecting acidification in Finland. – Doc. thesis, Finnish Meteorological Institute Contributions 44. 115 pp.

Muut julkaisut/Other publications

Ahonen-Jonnarth, U., Roitto, M., Markkola, A.M., Ranta, H. & Neuvonen, S. 2004: Effects of nickel and copper on growth and mycorrhiza of Scots pine seedlings inoculated with *Gremmeniella abietina*. – Forest Pathology 34(6): 337-348. doi: 10.1111/j.1439-0329.2004.00375.x

Callaghan, T.V., Johansson, M., Heal, O.W., Saelthun, N.R., Barkved, L., Bayfield, N., Brandt, O., Brooker, R., Christiansen, H.H., Høye, T.T., Humlun, O., Järvinen, A., Jonasson, C., Kohler, J., Magnusson, B., Meltofte, H., Mortensen, L., Neuvonen, S., Pearce, I., Rasch, M., Turner, L., Hasholt, B., Huhta, E., Leskinen, E., Nielsen, N. & Siikamäki, P. 2004: Environmental changes in the North Atlantic region: SCANNET as a collaborative approach for documenting, understanding and predicting changes. – Ambio Special Report 13: 39-50. Stable URL: <http://www.jstor.org/stable/25094587>

Gross, J., Fatouros, N.E., & Hilker, M. 2004: The significance of bottom-up effects for host plant specialization in *Chrysomela* leaf beetles. – Oikos 105(2): 368-376. doi: 10.1111/j.0030-1299.2004.13112.x

Gross, J., Fatouros, N.E., Neuvonen, S. & Hilker, M. 2004: The importance of specialist natural enemies for *Chrysomela lapponica* in pioneering a new host plant. – Ecological Entomology 29(5): 584-593. doi: 10.1111/j.0307-6946.2004.00632.x

Gross, J., Schmolz, E. & Hilker, M. 2004: Thermal Adaptations of the Leaf Beetle *Chrysomela lapponica*(Coleoptera: Chrysomelidae) to Different Climes of Central and Northern Europe. – Environmental Entomology. 33(4): 799-806. doi.org/10.1603/0046-225X-33.4.799

Heal, O.W., Callaghan, T.V., Johansson, M., Bayfield, N., Høye, T.T., Järvinen, A., Kohler, J., Magnusson, B., Mortensen, L., Neuvonen, S., Rasch, M. & Saelthun, N.R. 2004: The mountains of north Europe: conservation, management and initiatives SCANNET: A Scandinavian – North European Network of Terrestrial Field Bases. In: Thompson, D.B.A., Price, M.F. & Galbraith C.A. (eds.) SCANNET: A Scandinavian – North European Network of Terrestrial Field Bases.

Holtmeier, F.-K., Broll, G., & Anschlag, K. 2004: Winderosion und Ihre Folgen im Waldgrenzbereich und in der Alpenen Stufe einiger Nordfinnischer Fjelle. – Geoöko (Bensheim) 25: 203-224.

- Kaitaniemi, P., Vehviläinen, H. & Ruohomäki, K. 2004: Movement and disappearance of mountain birch defoliators are influenced by the interactive effects of plant architecture and induced resistance. – *Ecological Entomology* 29(4): 437-446. doi: 10.1111/j.0307-6946.2004.00617.x
- Klemola, T., Ruohomäki, K., Andersson, T. & Neuvonen, S. 2004: Clear reduction in size and fecundity of the Autumnal Moth in the increase phase of population cycle. – *Oecologia* 141(1): 47-56. doi: 10.1007/s00442-004-1642-z
- Koponen, S. 2004: Selkärangattomat eläimet. – In: Tynys, T. & Stolt, E. (toim.): Kaldoaivin erämaa-alueen ja Sammuttjängän-Vaijoenjängän soidensuojelualueen luonto, käyttö ja paikannimistö. Metsähallituksen luonnonsuojelujulkaisuja A 144: 54-59.
- Koponen, S., Relys, V., Weiss, I. & Hoffmann, J. 2004: On the phenology of peat bog spiders. – *European Arachnology (Proceedings of the 20th European Colloquium of Arachnology, Szombathely 22-26 July 2002)*: 163-170.
- Lempa, K., Agrawal, A.A., Salminen, J.-P., Turunen, T., Ossipov, V., Ossipova, V., Haukioja, E. & Pihlaja, K. 2004: Rapid herbivore-induced changes in mountain birch phenolics and nutritive compounds and their effects on performance of the major defoliator, *Epirrita autumnata*. – *Journal of Chemical Ecology* 30(2): 303-321. doi: 10.1023/B:JOEC.0000017979.94420.78
- Mäntylä, E., Klemola, T. & Haukioja, E. 2004: Attraction of willow warblers to sawfly-damaged mountain birches: novel function of inducible plant defenses. – *Ecology Letters* 7(10): 915-918. doi: 10.1111/j.1461-0248.2004.00653.x
- Neuvonen, S. 2004: Spatial and temporal variation in biodiversity in the European North. SCANNET – Scandinavian/North European Network of Terrestrial Field Bases. Work Package 6 – Final Report. Pearce, I., Neuvonen, S., Heino, S. & Brooker, R. (2004) Environmental indicators for Finland. SCANNET workshop at Kevo 20 October 2003. Report of SCANNET WorkPackage
- Punttila, P., Niemelä, P. & Karhu, K. (2004): The impact of wood ants (Hymenoptera: Formicidae) on the structure of invertebrate community on mountain birch (*Betula pubescens* ssp. *czerepanovii*). – *Annales Zoologici Fennici* 41(2): 429-446.
- Riipi, M., Haukioja, E., Lempa, K., Ossipov, V., Ossipova, S. & Pihlaja, K. 2004: Ranking of individual mountain birch trees in terms of leaf chemistry: seasonal and annual variation. – *Chemoecology* 14(1): 31-43. doi: 10.1007/s00049-003-0256-y
- Ruoho-Airola, T., Anttila, P. & Salmi, T. 2004 Airborne sulfur and nitrogen in Finland – trends and exposure in relation to air transport sector. – *Journal of Environmental Monitoring* 6: 1-11. doi: 10.1039/B309380H
- Ruusila, V., Morin, J.-P., van Ooik, T., Saloniemi, I., Ossipov, V. & Haukioja, E. 2004: A short-lived herbivore on a long-lived host: tree resistance to herbivory depends on leaf age. – *Oikos* 108(1): 99-104. doi: 10.1111/j.0030-1299.2005.13525.x
- Salminen, J.-P., Lahtinen, M., Lempa, K., Kapari, L., Haukioja, E. & Pihlaja, K. 2004: Metabolic modifications of birch leaf phenolics by an herbivorous insect: detoxification of flavonoid aglycones via glycosylation. – *Zeitschrift für Naturforschung, Section 59c*: 437-444.

Siljamo, P., Sofiev, M., Ranta, H., Kalnina, L., Ekeboom, A. 2004: Long-range atmospheric transport of birch pollen. Problem statement and feasibility studies. – HIRLAM Newsletter 46: 100-103.

Snäll, N., Huoponen, K., Saloniemi, I., Savontaus, M.L. & Ruohomäki, K. 2004: Dispersal of females and differentiation between populations of *Epirrita autumnata* (Lepidoptera: Geometridae) inferred from mitochondrial DNA variation. – European Journal of Entomology 101: 495-502.

Sääksjärvi, I.E., Haataja, S., Neuvonen, S., Gauld, I.D., Jussila, R., Salo, J. & Burgos, A.M. (2004) High local species richness of parasitic wasps (Hymenoptera: Ichneumonidae; Pimplinae and Rhyssinae) from the lowland rainforests of Peruvian Amazonia. – Ecological Entomology 29(6): 735-743. doi: 10.1111/j.0307-6946.2004.00656.x

Tammaru, T., Nylin, S., Ruohomäki, K. & Gotthard, K. (2004) Compensatory responses in lepidopteran larvae: a test of growth rate maximisation. – Oikos 107(2): 352-362. doi: 10.1111/j.0030-1299.2004.13363.x

Julkaisut vuonna 2005 – Publications in 2005

Muut julkaisut/Other publications

Asikainen, E. & Mutikainen, P. 2005: Preferences of pollinators and herbivores in gynodioecious *Geranium sylvaticum*. – Annals of Botany 95(5): 879-886. doi: 10.1093/aob/mci94

Bennett, K.D. & Hicks, S. 2005: Numerical analysis of surface and fossil pollen spectra from northern Fennoscandia. – Journal of Biogeography 32(3): 407-423.

Hester, A.J., Lempa, K., Neuvonen, S., Høegh, K., Feilberg, J., Arnthórsdóttir, S. & Iason, G. 2005: Birch sapling responses to severity and timing of domestic herbivore browsing - implications for management. – In: Wielgolaski, F. E. (ed.): Plant Ecology, Herbivory, and Human Impact in Nordic Mountain Birch Forests. Springer Verlag, Ecological Studies 180: 139-155.

Holtmeier, F.-K. 2005: Change in the timberline ecotone in northern Finnish Lapland during the last thirty years. – Reports from the Kevo Subarctic Research Station 23: 97-113.

Holtmeier, F.-K. & Broll, G. 2005: Sensitivity and response of northern hemisphere altitudinal and polar treelines to environmental change at landscape and local scales. – Global Ecology and Biogeography 14(5): 395-410. doi: 10.1111/j.1466-822X.2005.00168.x

Lahtinen, M., Kapari, L., Ossipov, V., Salminen, J.-P., Haukioja, E. & Pihlaja, K. 2005: Biochemical transformation of birch leaf phenolics in larvae of six species of sawflies. – Chemoecology 15(3): 153-159. doi: 10.1007/s00049-005-0307-7

Lempa, K., Neuvonen, S. & Tømmervik, H. 2005: Effects of reindeer grazing on pastures - a necessary basis for sustainable reindeer herding. – In: Wielgolaski, F.E. (ed.): Plant Ecology, Herbivory, and Human Impact in Nordic Mountain Birch Forests. Springer Verlag, Ecological Studies 180: 157-164.

- Lempa, K., Neuvonen, S. & Tømmervik, H. 2005: Sustainable reindeer herding in mountain birch ecosystem. – In: Wielgolaski, F.E. (ed.): Plant Ecology, Herbivory, and Human Impact in Nordic Mountain Birch Forests. Springer Verlag, Ecological Studies 180: 269-273.
- Luoto, M. & Hjort, J. 2005: Evaluation of current statistical approaches for predictive geomorphological mapping. – *Geomorphology* 67(3-4): 299-315.
doi.org/10.1016/j.geomorph.2004.10.006
- Mäkinen, Y., Laine, U., Heino, S. & Nurmi, J. 2005: Vascular flora of Inari Lapland. 7. Brassicaceae - Grossulariaceae. – *Reports from the Kevo Subarctic Research Station* 23: 1-95.
- Neuvonen, S. & Wielgolaski, F.E. 2005: Synthesis section 2: Herbivory in northern birch forests. – In: Wielgolaski, F.E. (ed.): Plant Ecology, Herbivory, and Human Impact in Nordic Mountain Birch Forests. Springer Verlag, Ecological Studies 180: 183-189.
- Neuvonen, S., Bylund, H. & Tømmervik, H. 2005: Forest defoliation risks in birch forest by insects under different climate and land use scenarios in northern Europe. – In: Wielgolaski, F.E. (ed.): Plant Ecology, Herbivory, and Human Impact in Nordic Mountain Birch Forests. Springer Verlag, Ecological Studies 180: 125-138.
- Oikonen, M.K., Hicks, S., Heino, S. & Rantio-Lehtimäki, A. 2005: The start of the birch pollen season in Finnish Lapland: separating non-local from local birch pollen and the implication for allergy sufferers. – *Grana* 44(3): 181-186. doi: 10.1080/00173130510010602
- Ovaska, J.A., Nilsen, J., Wielgolaski, F. E., Kauhanen, H., Partanen, R., Neuvonen, S., Kapari, L., Skre, O. & Laine, K. 2005: Phenology and performance of mountain birch provenances in transplant gardens: latitudinal, altitudinal and oceanity-continentiality gradients. – In: Wielgolaski, F.E. (ed.): Plant Ecology, Herbivory, and Human Impact in Nordic Mountain Birch Forests. Springer Verlag, Ecological Studies 180: 99-115.
- Ranta, H., Oksanen, A., Hokkanen, T., Bondenstam, K. & Heino, S. 2005: Masting by *Betula*-species; applying the resource budget model to north European data sets. – *International Journal of Biometeorology* 49(3): 146-151. doi: 10.1007/s00484-004-0228-0
- Riipi, M., Kause, A., Haukioja, E., Ossipov, V., Ossipova, S. & Pihlaja, K. 2005: Variable responses of folivorous sawflies to leaf quality of mountain birch. – *Canadian Journal of Forest Research* 35(1): 189-198. doi: 10.1139/X04-166
- Riipi, M., Lempa, K., Haukioja, E., Ossipov, V. & Pihlaja, K. 2005: Effects of simulated winter browsing on mountain birch foliar chemistry and on the performance of insect herbivores. – *Oikos* 111(2): 221-234. doi: 10.1111/j.0030-1299.2005.13781.x
- Ruusila, V., Morin, J.-P., van Ooik, T., Saloniemi, I., Ossipov, V. & Haukioja, E. 2005: A short-lived herbivore on a long-lived host: tree resistance to herbivory depends on leaf age. – *Oikos* 108(1): 99-104. doi: 10.1111/j.0030-1299.2005.13525.x
- Solberg, B., Tømmervik, H., Thannheiser, D. & Neuvonen, S. 2005: Economic limits and possibilities for sustainable utilization of northern birch forests. – In: Wielgolaski, F.E. (ed.): Plant

Ecology, Herbivory, and Human Impact in Nordic Mountain Birch Forests. Springer Verlag, Ecological Studies 180: 219-233.

Tømmervik, H., Wielgolaski, F.E., Neuvonen, S., Solberg, B. & Høgda, K.A. 2005: Biomass and production on a landscape level in the mountain birch forests. – In: Wielgolaski, F.E. (ed.): Plant Ecology, Herbivory, and Human Impact in Nordic Mountain Birch Forests. Springer Verlag, Ecological Studies 180: 53-70.

Wielgolaski, F.E., Karlsson, P.S., Neuvonen, S., Thannheiser, D., Tømmervik, H. & Gautestad, A.O. 2005: The nordic mountain birch ecosystem - challenges to sustainable management. – In: Wielgolaski, F.E. (ed.): Plant Ecology, Herbivory, and Human Impact in Nordic Mountain Birch Forests. Springer Verlag, Ecological Studies 180: 343-356.

