

Curriculum Vitae
for
Sándor F. Tóth

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Research Interests:

- Forest and natural resource management planning
 - Multiple criteria decision making in forestry and natural resources
 - Mathematical programming and optimization
 - Operations Research applications in natural resources
 - Economics of forest ecosystem services
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Education:

- PhD, Dual Title in Forest Resources and Operations Research, Penn State University. 2005. GPA: 3.83. Dissertation title: Modeling Timber and Non-timber Tradeoffs in Spatially-explicit Forest Planning
 - Master of Agriculture, Shinshu University, Nagano (Minami-Minowa), Japan, 2002. Thesis title: Current Problems in the Management of Private Forests in Japan
 - Dipl. Forest Engineer, University of Forestry and Wood Sciences, Sopron, Hungary, 1994. Thesis title: Potential Utilization of Global Position Systems (GPS) in Forest Management
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Employment:

June 2007 to Present

Assistant Professor of Natural Resource Informatics, College of Forest Resources, University of Washington, Seattle

- Teaching (25%): Quantitative decision techniques in natural resources
- Research (75%): Multiple-criteria decision making, economics of forest environmental services, spatial forest planning, invasive species management, reserve selection

July 2006 to June 2007

Assistant Professor of Forest Resource Management/Economics, Department of Natural Resource Ecology and Management, Oklahoma State University

- Teaching (30%): Forest Economics & Finance, Forest Management
- Research (70%): Spatially-explicit harvest scheduling models, multiple objective decision support systems for natural resource management. Economics of non-timber forest services.

March 2006 to July 2006

Postdoctoral Research Fellow, Ensis Environment (former New Zealand Forest Research Institute), Rotorua, New Zealand. Primary duty: developing decision tools to quantify, value and sell non-timber forest services from managed forests in New Zealand.

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| June 2005 to March 2006 | <u>Research Associate</u> , Penn State School of Forest Resources Duties: 1) develop programs for applying spatially-explicit forest planning models and methods for the DCNR Bureau of Forestry, 2) help develop new spatially-explicit forest planning applications using case studies from the Bureau of Forestry, 3) develop documentation of the new planning tools and applications, including users guides and general publications, and 4) help supervise and assist graduate students and post-docs working on the DCNR planning project. |
| May 2002 – June 2005 | <u>Graduate Research Assistant</u> , Penn State School of Forest Resources. Developed forest management plans for the Pennsylvania DCNR Bureau of Forestry and researched economic optimization techniques for forest planners who make management decisions under conflicting objectives. |
| April 1999 – April 2002 | <u>Japanese Government (Monbusho) Research Student</u> : Hitotsubashi University, Tokyo and Shinshu University, Nagano, Japan. Worked out an action plan to revitalize the private forestry sector in Japan. |
| December 1994 – March 1999 | <u>Forest Planner</u> with the Hungarian State Forest Service, Veszprém Directorate. Job focused on preparing forest management plans for public and private forests. Other duties: inventory surveys and analyses, afforestation, site investigation, land-use planning, providing professional assistance for private forest landowners, developing the nation-wide GIS system for Hungary's forests and surveys for the International Co-operative Programme on the Assessment and Monitoring of Air Pollution Effects on Forests (ICP Forests) and the National Growth and Yield Monitoring Network. |

Professional Associations:

- Society of American Foresters
- INFORMS: Institute for Operations Research and the Management Sciences
- MCDM: International Society on Multiple Criteria Decision Making
- Xi Sigma Pi (Forestry Honor Society)

Peer-Reviewed Publications:

- **Tóth, S.F.**, R.G. Haight, S.A. Snyder, S. George, J.R. Miller, M.S. Gregory and A.M. Skibbe **2009**. Reserve Selection with Minimum Contiguous Area Restrictions: An Application to Open Space Protection Planning in Suburban Chicago. In Press. *Biological Conservation*, doi:10.1016/j.biocon.2009.02.037
 - **Tóth, S.F.** and M.E. McDill **2009**. Finding Efficient Harvest Schedules under Three Conflicting Objectives. *Forest Science* 55(2): 117-131
 - **Tóth, S.F.**, and M.E. McDill **2008**. Promoting Large, Compact Mature Forest Patches in Harvest Scheduling Models. *Environmental Modeling and Assessment* 13(1):1–15.
 - **Tóth, S.F.** **2007**. Using Spatial Tradeoffs to Build Consensus and to Value Non-Market Services in Forest Management. In Forest Resource Management and Mathematical Modeling – FORMATH Kobe 2007 International: 7(6): 79-94.
 - **Tóth, S.F.**, M.E. McDill, and S. Rebaín **2006**. Exploring the Efficient Frontier of a Bi-Criteria, Spatially Explicit, Harvest Scheduling Model. *Forest Science* 52(1):93-107.
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- **Tóth, S.F.**, T. Ueki and M.E. McDill **2006**. Monitoring the Forest Resources and Management of Private Landowners in Nagano, Japan, *Japanese Journal of Forest Planning* 12:59-64.
 - **Tóth, S.F.**, T. Ueki and Y. Uozumi **2001**. The Ecological and Historical Background of Forest Management in Hungary, *Japanese Journal of Forest Planning* 7:11-19.
 - **Tóth, S.F.**, T. Ueki and Y. Uozumi **2001**. The Current Situation of Hungarian Forest Management, with Special Emphasis on the Recent Changes in Forest Ownership, *Japanese Journal of Forest Planning* 7:21-28.

Manuscripts to be submitted:

- **Tóth, S.F.**, G.J. Ettl and S.S. Rabotyagov. ECOSEL: An Auction Mechanism for Forest Ecosystem Services. *Forest Science*

Peer-Reviewed Conference Proceedings:

- **Tóth, S.F.**, T. Ueki and M.E. McDill 2003: Monitoring the Forest Resources and Management of Private Landowners in Nagano, Japan, *The Proceedings of FAO World Forestry Congress* (Paper ranked 1: "Outstanding Contribution to Congress")– *XII, Quebec City, Canada* Vol. C: 177-185.

Other Publications:

- **Tóth, S.F.**, G.J. Ettl and S.S. Rabotyagov 2008. ECOSEL: An Auction Mechanism for Forest Ecosystem Services. *CINTRAFOR Newsletter Special Issue on ECOSEL*.
- **Tóth, S.F.** 2001: Forests and Forestry in Japan. A series of six papers. *Hungarian Journal of Forestry (Erdészeti Lapok)*

Grants:

The Feasibility and Expected Outcomes of the ECOSEL Auction Mechanism to Evaluate and Sell Forest Ecosystem Services. **PI: Sándor F. Tóth**, Co-PIs: Greg Ettl. USDA National Research Initiative Competitive Grants Program (Managed Ecosystems). Amount: \$50,000. April 2008.

Dynamic Reserve Selection: Modeling the Land Price Feedback Effect in Strategic Land Retentions in Western Washington. **PI: Sándor F. Tóth**, Co-PI: Robert G. Haight, and Luke Rogers. USDA Forest Service, Northern Research Station. St. Paul, MN. \$30,000. February 2009.

Providing Forest Ecosystem Services with the ECOSEL Auction Mechanism in Experimental Settings. **PI: Sándor F. Tóth**, Co-PIs: Sergey S. Rabotyagov and Gregory J. Ettl. USDA CSREES McIntire-Stennis Formula Fund. \$33,000. December 2008.

Reserve Selection with Minimum Contiguous Area Restrictions. **PI: Sándor F. Tóth**, Co-PIs: Robert G. Haight, Stephanie A. Snyder and James R. Miller. USDA Forest Service, Northern Research Station. St. Paul, MN. \$20,000. April 2007.

Developing a Decision System to Aid Multipurpose Forest Management in Chile. **PI: Sándor F. Tóth**. National Science Foundation (OISE-0601838). Arlington, VA. \$57,000. March 2006. Declined due to transfer issues from Oklahoma State to the University of Washington.

Development of a LIDAR-driven forest inventory protocol. **PI: L. Monika Moskal**, Co-PIs: **Sándor F. Tóth**. USDA Forest Service, Pacific Northwest Research Station. Portland, OR. \$55,000. February 2009.

Proposal for the University of Washington to join the I/UCRC Center for Advanced Forest Systems. PI: David Briggs, Co-PIs: Robert Harrison, L. Monika Moskal, Sándor F. Tóth and Eric Turnblum. National Science Foundation. \$350,000. February 2009.

Awards and Honors:

- Forest Science paper titled “Finding Efficient Harvest Schedules under Three Conflicting Objectives” is selected as one of the Research Highlights in the Journal of Forestry (March 2009)
- “Best Presentation in Forestry Sponsored Sessions” award, INFORMS 2008 (October 2008)
- Honorable Mention winner of the INFORMS ENRE Student Travel Contest (November 2005)
- Penn State Graduate School Teaching Certificate (November 2004)
- Recipient of Top-Up Fund from the Graduate School, Penn State University (2002-2003)
- Fulbright Scholarship - *One of ten awarded from several hundred applications* (1999-2000)
- Japanese Government Scholarship (*Monbusho*) - *One of ten awarded from several hundred applications* (1999-2002)

Conference Presentations:

- **Tóth, S.F.**, R.G. Haight, S.A. Snyder, M. Gregory, A.M. Skibbe and J.R. Miller. Optimal Reserve Selection Subject To Contiguous Habitat Requirements. 2008 INFORMS Annual Meeting, Washington DC (10/12/2008)
 - **Tóth, S.F.**, G.J. Ettl and L. Rogers: Multi-criteria Optimization to Auction Forest Ecosystem Services. 2008 INFORMS Annual Meeting, Washington DC (10/12/2008)
 - **Tóth, S.F.:** Multi-Objective Optimization to Auction Forest Ecosystem, *Western Forest Economists 43rd Annual Meeting, Welches, Oregon* (5/7/2008)
 - **Tóth, S.F.:** Using Spatial Tradeoffs to Build Consensus and to Value Non-Market Services in Forest Management. *FORMATH Kobe 2007 International Meeting, Kobe, Japan* (3/17/2007)
 - McDill, M.E. and **S.F. Tóth:** Does the size in ARM matter? 2007 *INFORMS Annual Meeting, Forestry Applications, Seattle, Washington*, (11/2/2007)
 - **Tóth, S.F.:** A linear approach to model sigmoid growth curves. 2006 *INFORMS Annual Meeting, Forestry Applications, Pittsburgh, Pennsylvania*, (11/6/2006)
 - **Tóth, S.F.** and M.E. McDill: Numerical Issues in Multi-Objective Spatial Forest Planning. 2006 *Symposium for Systems Analysis in Forest Resources, Burlington, Vermont*, (9/8/2006)
 - **Tóth, S.F.** and M.E. McDill 2005: Finding the Efficient Frontier of a Tri-Criteria, Spatially Explicit, Harvest Scheduling Model. 2005 *INFORMS Annual Meeting, Forestry Applications, San Francisco, California*, (11/16/2005)
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- **Tóth, S.F.**, M.E. McDill and S. George 2005: The Computational Performance of Strengthened Cover Inequalities in Area-based Harvest Scheduling. *2005 INFORMS Annual Meeting, Forestry Applications, San Francisco, California, (11/16/2005)*
 - **Tóth, S.F. and M.E. McDill** 2004: Promoting large, compact mature forest patches through harvest scheduling models. *2004 INFORMS Annual Meeting, Forestry Applications, Denver, Colorado, (10/25/2004)*
 - McDill, Marc E., **S.F. Tóth** and S. George 2004: Strengthening Cover Inequalities for Area-Based Adjacency Formulations of Harvest Scheduling Models. *2004 INFORMS Annual Meeting, Forestry Applications, Denver, Colorado (10/25/2004)*
 - **Tóth, S.F.** and M.E. McDill, S.A. Rebaun 2003: Exploring the Efficient Frontier of a Bi-Criteria, Spatially Explicit, Harvest Scheduling Model. *2003 Symposium on Systems Analysis in Forest Resources, Stevenson, Washington, (10/09/2003)*
 - **Tóth, S.F.**, T. Ueki and M.E. McDill 2003: Monitoring the Forest Resources and Management of Private Landowners in Nagano, Japan. *FAO World Forestry Congress - XII, Quebec City, Canada (09/27/2003)*
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Invited Seminars, Guest Lectures and Stakeholder Workshops (6/16/07 –):

- Tóth, S.F. The Role of GIS in Building an Auction Mechanism for Forest Ecosystem Services. Guest Lecture for ESRM250 – Introduction to GIS, University of Washington (2/9/2009)
 - Tóth, S.F., G. Ettl and S.S. Rabotyagov: ECOSEL: Selling Forest Ecosystem Services – A Workshop and Mock Auction. The USDA Forest Service Northwest Research Station, Corvallis, Oregon (1/21/2009)
 - Tóth, S.F. ECOSEL: An auction mechanism to sell forest ecosystem services. Invited Seminar at the Weyerhaeuser Corporation Headquarters, Federal Way, Washington (12/2/2008).
 - Tóth, S.F. The Role of GIS in Building Optimal Reserve Selection Models. Guest Lecture for ESRM250 – Introduction to GIS, University of Washington (11/20/2008)
 - Tóth, S.F. Guest Seminar Facilitator for Bioresource-based Energy for Sustainable Societies NSF-IGERT Program, University of Washington (11/18/2008)
 - Tóth, S.F., G. Ettl and S.S. Rabotyagov. An Auction-Based Funding Mechanism for Recreational Services in Washington State Forestlands. Invited Seminar at a Washington State Department of Natural Resources Advisory Meeting. Snoqualmie, Washington (11/13/2008).
 - Tóth, S.F., G. Ettl and S.S. Rabotyagov: How Much Would You Pay to Produce Forest Ecosystem Services? – An Auction. The 2008 Northwest Environmental Forum. Blaine, Washington (10/30/2008).
 - Tóth, S.F. and G. Ettl. An Auction Mechanism to Sell Forest Ecosystem Services. Invited Seminar at the October 17, 2008 Nisqually River Council Meeting. Longmire, Washington (10/17/2008).
 - Tóth, S.F. Reserve Selection with Minimum Contiguous Area Restrictions. UW Aquatic & Fishery Sciences Quantitative Seminar. Seattle, Washington (9/26/2008).
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- Tóth, S.F. Multi-objective Optimization to Auction Forest Ecosystem Services. Invited Seminar at the Washington State Department of Natural Resources. Olympia, Washington (7/1/2008).
 - Tóth, S.F. The Role of GIS in Aid of Optimal Reserve Selection. Guest Lecture for ESRM250 – Introduction to GIS, University of Washington (5/8/2008)
 - Tóth, S.F. Spatial Optimization in Natural Resource Management. UW Quantitative Ecology and Resource Management Seminar. Seattle, Washington (4/8/2008).
 - Tóth, S.F. Multi-criteria optimization to auction forest ecosystem services. Seminar, USFS PNW Research Station, Portland, OR (2/20/2008)
 - Tóth, S.F. Combinatorial Optimization in Spatial Forest Planning. Invited seminar for the Combinatorics Group at the UW Department of Mathematics. Seattle, WA, (2/6/2008)
 - Tóth, S.F. Spatial Optimization in Natural Resources. Invited seminar at the Department of Natural Resources, Olympia, Washington (12/13/2007)
 - Tóth, S.F. Multi-criteria Modeling Meeting Port Blakely Tree Farms, Tumwater, WA (12/12/2007)
 - Tóth, S.F. The Adjacency Problem in Forest Management. Invited seminar at the UW Department of Mathematics. Seattle, WA, (12/7/2007)
 - Tóth, S.F. Developing Quantitative Decision Tools to Aid Forest Natural Resource Management. Invited seminar at the Olympic Natural Resources Center. Forks, WA, (11/19/2007)
 - Tóth, S.F. Spatial Optimization in Natural Resources. Invited seminar at the UW Department of Industrial Engineering. Seattle, WA, (10/9/2007)

Teaching:

- University of Washington: Quantitative Decision Techniques in Natural Resources (ESRM 490/590B) in spring quarters. Student Evaluation: 3.50/5.00 of combined score
- Oklahoma State University: Timber Management (FOR 4223). Student Evaluation: 3.88/4.00 for instructor and 3.43/4.00 for course
- Oklahoma State University: Forest Economics and Finance (FOR 3993). Student Evaluation: 4.00/4.00 for instructor and 3.63/4.00 for course

Service:

- Journal Reviewer: Operations Research, Forest Science, Canadian Journal of Forest Research, Biological Conservation, Landscape Ecology, Southern Journal of Applied Forestry, Forest Policy and Economics
 - Subject Matter Reviewer for the USDA Forest Service
 - Presentation Reviewer for the 2006 Annual Meeting of the Institute of Operations Research and the Management Sciences
 - Core Faculty Member of the University of Washington's Quantitative Ecology and Resource Management interdisciplinary graduate program
 - College of Forest Resources, Elected Faculty Council Member (11/19/2008-)
 - College of Forest Resources Ad Hoc Budget Advisory Committee Member
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- College of Forest Resources Representative of the UW's MathAcross-Campus Quarterly Seminar Series

Forest Management Plans (Hungarian Forest Service):

Tóth, Sándor F. (Chief Planner), Csaba Bognár, Tamás Fábián, and Miklós Varga 1998: Integrated Forest Management Plan for District 464. (Pápa – Industrial and Non-industrial Private Landowners). Reg. No. 37/1998. Valid from 01/01/1998 until 12/31/2007. Area: 8,618.5 ha. Hungarian Forest Service 07/01/1998.

Fábián, Tamás (Chief Planner), Zoltán Borsó, Sándor Siffer, Ferenc Szívós, and **Sándor F. Tóth** 1999: Integrated Forest Management Plan for District 443. (Monostorapáti – Industrial and Non-industrial Private Landowners). Reg. No. 20/1999. Valid from 01/01/1999 until 12/31/2008. Area: 6,478.1 ha. Hungarian Forest Service 07/30/1999.

Hegy, Higin. (Chief Planner), Lajos Dávid, Sándor Siffer, Tamás Szedlák, Miklós Varga, and **Sándor F. Tóth** 1997: Integrated Forest Management Plan for District 444. (Balatonfüred – Industrial and Non-industrial Private Landowners). Reg. No. 6/1997. Valid from 01/01/1997 until 12/31/2006. Area: 7,554.0 ha. Hungarian Forest Service 07/31/1997.

Dávid, Lajos. (Chief Planner), Higin Hegyi, Ferenc Szívós, Tamás Szedlák and **Sándor F. Tóth** 1996: Integrated Forest Management Plan for Devecser, Balatonfelvidéki Erdőgazdaság RT. (State Public Forestland Management Agency). Reg. No. 67/1996. Valid from 01/01/1996 until 12/31/2004. Area: 7,576.3 ha. Hungarian Forest Service 07/31/1996.

Consulting (Hungarian Forest Service):

Harhai, László, Katalin T. Ecseginé, Tamás Szedlák, **Sándor F. Tóth**, and Ferenc Lugosi 2000: Site Investigation Plan for Kruse-Budapest Environmental and Game Management Ltd. Location: Csabrendek, Gyepükaján, Káptalanfa, Nemeshany, Nyirád, Pusztamiske, Szentimrefalva; Hungary. Area: 517.4 ha. Reg. No.: 1422/2000, 2000.11.28.

Tóth, Sándor F. 1997: Site Investigation and Afforestation Plan for Non-industrial Private Landowner: Ildikó Badics. Location ID: Nyárád, Comp. 11 A; Hungary. Area: 0.3 ha.

Tóth, Sándor F. and Ferenc Lugosi 1997: Site Investigation and Afforestation Plan for Non-industrial Private Landowner: Lajos Molnár. Location ID: Nemesszalók, Comp. 42 G, H; Hungary. Area: 4.3 ha. Reg. No.: 1087-1/2000, 2000.09.13.

Tóth, Sándor F. 1996: Site Investigation and Afforestation Plan for Ugod Agricultural Products, Processing and Services. Location ID: Ugod, Comp. 29 D, E; Hungary. Area: 5.8 ha.

Tóth, Sándor F. and Miklós Gábor 1996: Air Pollution Damage Assessment on HM Veszprémi Erdőgazdaság RT.'s (State Forestland Management Agency) forestland. Location ID: Várpalota Comp. 70; Hungary. Area: 42.5 ha.

Tóth, Sándor F. 1995: Site Investigation and Afforestation Plan for Non-industrial Private Landowner: Dr. József Nagy. Location ID: Monostorapáti, Comp. 62 A, B, C; Hungary. Area: 6.3 ha.

Language Skills:

Hungarian, Japanese and English

<u>Technical Skills:</u>	Linear, integer, dynamic and multiobjective programming, discrete event system simulation, economic optimization and financial analysis
<u>Computer Skills:</u>	Microsoft Office (Excel, Word, Access, Power Point), Microsoft Visual Studio (Visual Basic), MINITAB (statistics), LINDO (optimizer), CPLEX (optimizer), AutoMod (simulator), Database Programming with VB, ESRI ArcInfo (GIS), Web-design
<u>International Experience:</u>	Professional trips to Siberia (1994), Mongolia (1994) and Turkey (1995) Other trips include China, Japan, Thailand, Indonesia, Morocco and many of the European countries.
<u>Immigration Status:</u>	U.S. Citizen
