

Karun Pandit, Ph.D.

356 Newins-Ziegler Hall, Gainesville, FL 32611
(352) 294-3775 | karunpandit@ufl.edu

EDUCATION

State University of New York, College of Environmental Science and Forestry **Syracuse, NY**
Ph.D. Monitoring, Analysis & Modeling **2016**
Dissertation topic: *“Changes in Forest Biomass and Overstory-Understory Species Similarities in the context of Changing Land Ownerships”*.

Tribhuvan University, Institute of Forestry **Pokhara, Nepal**
M.Sc. in Forestry **2003**
Thesis topic: *“An assessment of variation of major soil properties for efficient soil management and crop productivity in Pokhara Khola Sub-watershed, Dhading, Nepal”*.

B.Sc. in Forestry **2000**

PROFESSIONAL EXPERIENCE

School of Forest, Fisheries & Geomatic Sciences, University of Florida **Gainesville, FL**
Postdoctoral Assistant **2020 - current**

- Explore forest ecosystem change (in terms of mortality, basal area, species composition, biomass, and seedling count) after disturbance (fire, insects, diseases, and harvests) across conterminous United States using machine learning approach.
- Understand tree, stand, and landscape level variables associated with fusiform rust in the pines in southeastern United States to forecast spatiotemporal distribution of the disease for future alternate climate and management scenarios.
- Investigate tree traits and climatic variables associated with foliar disease in pine trees in southern United States by applying generalized linear mixed model (GLMM) and machine learning (Maximum Entropy) approach.

Department of Geosciences, Boise State University **Boise, ID**
Postdoctoral Research Assistant **2016 – 2019**

- Application of Random Forest approach to update allometric and physiological parameters of *Juniper occidentalis* in Ecosystem Demography (EDv2.2) model by comparing model predicted aboveground biomass with remote sensing products in Idaho.
- Explore the performance of fire module in EDv2.2 model at different temporal and spatial scales using MODIS-derived Gross Primary Productivity in the Great Basin of the western United States.
- Perform sensitivity and optimization analysis of sagebrush Plant Function Type (PFT) parameters, related to photosynthesis, stomatal conductance, and allocation to improve ecosystem flux estimation in Ecosystem Demography (EDv2.2) model
- Establish allometric relationships between height, volume, woody biomass, leaf biomass, canopy area, and root depth for sagebrush based on field observation and LiDAR data.
- Collaborate on projects funded by Joint Fire Science Program, National Aeronautics and Space Administration – Terrestrial Ecology Program, and United States Department of Agriculture, Forest Service, Western Wildland Environmental Threat Assessment Center

Research Foundation at State University of New York**Syracuse, NY**

Research Assistant

2013 - 2015

- Research study in collaboration with USDA, Forest Service, and Northeastern States Research Cooperative (NSRC)
- Perform geospatial and statistical modeling of change in timberland ownerships in Northeastern United States, using Kriging, Ripley's K Function, and Multiple Logistic Regression
- Explore relationships among change in aboveground biomass, timberland ownerships and social-ecological factors
- Assess spatio-temporal changes in overstory-understory tree species composition

State University of New York, College of Environmental Science and Forestry**Syracuse, NY**

Teaching Assistant

2010 - 2012

- Assist graduate and undergraduate students in the two different courses i) *Natural Resources Measurements and Sampling*, and ii) *Introduction to Geospatial Information Technology*, mostly assisting in their lab works and field works
- Support students in learning statistical and geospatial tools

Chitwan National Park, Department of National Parks and Wildlife Conservation**Chitwan, Nepal**

Conservation Officer

2006 - 2009

- Prepare forest management plans with the application of inventory, growth modeling and harvest scheduling.
- Implement park and forest management plans with actions for grassland management, habitat conservation, forest management, and antipoaching related activities
- Perform wildlife survey and habitat assessment surveys

SELECTED PUBLICATIONS

Pandit K., and Johnson, D. Recent spatiotemporal dynamics of fusiform rust in southern pine species. (in prep.)

Pandit K., Johnson, D. and Lichstein, J. Effects of natural and anthropogenic disturbances on forests across the United States. (in prep.).

Pandit, K., Bevilacqua, E., Newman, D. H. and Butler, B. J. 2021. Understanding the spatial pattern and driving factors associated with the timberland ownerships' change in the Northern United States. *Journal of Forestry* (in press)

Johnson, D.J., Magee, L., **Pandit, K.**, Bourdon, J., Broadbent, E. N., Glenn, K., Kaddoura, Y., Machado, S., Nieves, J., Wilkinson, B., Zambrano, A.M.A., and Bohlman, S. 2021. Canopy tree density and identity influence tree regeneration patterns and woody species diversity in a longleaf pine forest. *Forest Ecology and Management*, 490, 119082, <https://doi.org/10.1016/j.foreco.2021.119082>.

Pandit, K., Dashti, H., Hudak, A. T., Glenn, N. F., Flores, A. N., and Shinneman, D. J. 2021. Understanding the effect of fire on vegetation composition and gross primary production in a semi-arid shrubland ecosystem using the Ecosystem Demography (EDv2.2) model, *Biogeosciences*, 18, 2027–2045, <https://doi.org/10.5194/bg-18-2027-2021>.

Dashti, H., **Pandit, K.**, Glenn, N. F., Flores, A.N, Shinneman, D. J., and Hudak, A.T. 2021. Performance of the ecosystem demography model (EDv2.2) in simulating gross primary production capacity and activity in a dryland study area, *Agricultural and Forest Meteorology*, 297, 108270. <https://doi.org/10.1016/j.agrformet.2020.108270>.

- Pandit, K.** Smith, J., Quesada, T., Villari, C. and Johnson, D. 2020. Association of recent incidence of foliar disease in pine species in the southeastern United States with tree-level and climate variables. *Forests* 2020, 11, 1155. <https://doi.org/10.3390/f11111155>.
- Pandit, K.**, Dashti, H., Glenn, N. F., Flores, A. N., Maguire, K. C., Shinneman, D. J., Flerchinger, G. N., and Fellows, A. W. 2019. Developing and optimizing shrub parameters representing sagebrush (*Artemisia* spp.) ecosystems in the northern Great Basin using the Ecosystem Demography (EDv2.2) model, *Geosci. Model Dev.*, 12, 4585–4601, . <https://www.geosci-model-dev.net/12/4585/2019/>.
- Pandit, K.**, Bevilacqua, E., Mountrakis, G. and Malmshemer, R.W. 2016. Spatial Analysis of Forest Crimes in Mark Twain National Forest, Missouri. *Journal of Geospatial Applications in Natural Resources*. 1(1): 39-53.
http://scholarworks.sfasu.edu/j_of_geospatial_applications_in_natural_resources/vol1/iss1/3
- Awasthi K.D., Tiwari, K.R., Balla, M.K., Sitaula, B.K., Singh, B.R. and **Pandit K.** 2007. Plot level runoff, soil and nutrient loss in upland rainfed terraces (bari) and aspect-wise soil quality of different land uses in pokhare khola watershed, Nepal. *International Journal of Ecology and Environmental Sciences*. 33 (2-3), 105-14
- Pandit, K.** and Balla, M.K. 2006. An Assessment of Soil Fertility Management Issues in Pokhare Khola Watershed, Dading. *Nepal Journal of Science and Technology*. Vol.7:89-96.
- Pandit, K.** and Balla, M.K. 2004. Indigenous knowledge of terrace management and improvement in Paundi Khola watershed, Lamjung district. *Himalayan Journal of Sciences*. 2(3): 33-36

TEACHING EXPERIENCE

State University of New York, College of Environmental Science and Forestry

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| Forest Sampling (undergraduate), Guest lecture | 2013 |
| GIS data models (undergraduate), Guest lecture | 2012 |
| Introduction to image processing (undergraduate), Guest lecture | 2012 |
| Log and standing tree volume estimation (undergraduate), Guest lecture | 2011 |

Tribhuvan University, Kathmandu Forestry College

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| Wildlife Biology (undergraduate), Co-instructor | 2009 |
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Tribhuvan University, Institute of Forestry

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| Raster data analysis (undergraduate), Guest lecture | 2003 |
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SELECTED RESEARCH GRANTS / AWARDS

Albert L. Leaf Memorial Award. Department of Forests and Natural Resource Management. State University of New York College of Environmental Science and Forestry. 2015

C. Eugene Farnsworth Memorial Fellowship for excellence in graduate studies. Department of Forests and Natural Resource Management. State University of New York College of Environmental Science and Forestry. 2014

Dynamics of institutional timberland ownership and its impact on forest management in Northern Forest Region, US. Northeastern States Research Cooperative, Role: CO-PI with Eddie Bevilacqua (Lead PI), \$10,000, 2013

An Analysis of growth prediction of forest attributes using Forest Vegetation Simulator (FVS). Internship award from The Edna Bailey Sussman Foundation. Syracuse, NY, \$5,580, 2011

PROFESSIONAL SERVICE

Manuscript review, *Journal of Forestry*, *Frontiers in Environmental Science*, *Plos One* and *Journal of Natural Resources and Development*
Member, editorial advisory board, *Journal of Natural Resources and Development*, 2013
Judge, Third Annual Student Showcase, Boise State University, 2019
Team leader, 24th Annual Warden Seminar at Chitwan National Park, Nepal. February 4-10, 2008
Team leader, *Gharial (Gavialis gangeticus) Monitoring Program in Chitwan National Park*, a collaborative study between Chitwan National Park and Bird Conservation Nepal, February, 2007

SELECTED TALKS / PRESENTATIONS

Pandit, K. Smith, J., Quesada, T., Villari, C. and Johnson, D. 2020. *Association of recent incidence of foliar disease in pine species in the southeastern United States with tree and climate variables*, Forest Biology Research Cooperative, 24th Annual Advisory Council Meeting, October 28, 2020, Gainesville, FL.

Pandit, K., Hudak, A., Glenn, N., and Flores, A.N. 2020. *Evaluating allometric and physiological parameters to improve aboveground biomass estimation of Juniper occidentalis at South Mountain, Idaho using the ED2 model*. Paper presented at 2020 Land Model and Biogeochemistry Working Group Meetings. National Center for Atmospheric Research. February 11-13, Boulder, CO.

Pandit, K., Dasthi, H, Glenn, N., Flores, A., Shinneman, D.J. and Hudak, A. 2019. *Understanding the uncertainties in estimating post-fire recovery of biomass using the Ecosystem Demography (EDv2.2) model*. Lightning talk at Ecological Forecasting Initiative Conference, May 13-15, D. C.

Pandit, K., Dasthi, H, Glenn, N., Flores, A., Shinneman, D.J. and Hudak, A. 2019. *Modeling vegetation composition and biomass of the sagebrush ecosystem in the Reynolds Creek Experimental Watershed (RCEW) for different CO₂ and fire conditions, using the Ecosystem Demography (EDv2.2) Model*. Paper presented at Land Model and Biogeochemistry Working Group Meetings. National Center for Atmospheric Research. February 11-13, Boulder, CO.

Pandit, K., Dasthi, H, Glenn, N., Flores, A.N., Maguire, K., and Shinneman, D.J. 2018. *Assessing the dynamics of the sagebrush ecosystem under different conditions of initial vegetation, ambient CO₂, and fire*. Poster presented at 2018 AGU Fall Meeting. December 10-14, D. C.

Pandit, K., Dasthi, H, Glenn, N., Flores, A.N., Maguire, K., and Shinneman, D.J. 2018. *Assessing the response of sagebrush ecosystem to initial ecosystem and altered climate conditions*. Paper presented at 9th Annual Northwest Climate Conference. October 9-11, Boise, ID.

Pandit, K. 2016. *A seminar on research and teaching in geospatial technologies and biometrics*. Presented at the Department of Forestry, Mississippi State University. 20 January 2016, Mississippi State, MS.

Pandit, K., Bevilacqua, E. and Newman, D.H. 2015. *Evaluating net growth in aboveground tree biomass among land ownerships across Northern United States using FIA data*. Paper presented at New York Society of American Foresters annual meeting. 22 January 2015. Syracuse, NY.

Pandit, K. and Bevilacqua, E. 2014. *Effects of land ownership and forest management activities on overstory-understory tree species composition across major forest types in Northeastern US*. Paper presented at Joint Mensurationists 2014 Annual Meeting. November 2-4, 2014, Raleigh, NC.

Pandit, K. and Bevilacqua, E. 2014. *Spatial pattern of aboveground biomass change across Northeastern U.S.* Paper presented at 6th annual Forest Resources and Environmental Conservation graduate research symposium. Virginia Tech. April 1st, 2014. Blacksburg, VA.

Pandit, K. and Bevilacqua, E. 2013. *Quantification of aboveground forest biomass in relation to forest land characteristics using Forest Inventory and Analysis Data*. Paper presented at 17th Annual Northeastern Mensurationists Organization (NEMO) meeting. November 4-5, 2013, York Harbor, ME.

Pandit, K., Bevilacqua, E and Perry, J. A. 2012. *Evaluating Forest Vegetation Simulator in predicting basal area and diameter growth of major forest types within New York State*. Paper presented at 16th Annual Northeastern Mensurationists Organization (NEMO) meeting. October 1-2, 2012, State College, PA.