

## CURRICULUM VITAE

**Natalie T. Boelman**

### EDUCATION

Ph.D., Earth and Environmental Sciences 2004  
*Columbia University, New York, NY USA*

M.A., Earth and Environmental Sciences 2001  
*Columbia University, New York, NY USA*

B.Sc., Physical Geography 1999  
*McGill University, Montreal, QC Canada*

### PROFESSIONAL APPOINTMENTS

Lamont Associate Research Professor July 2015 to present  
*Lamont-Doherty Earth Observatory, Columbia University*

Adjunct Faculty Sep 2014 to present  
*Ecosystems Center, Marine Biological Laboratory (MBL)  
Woods Hole, MA USA*

Affiliated Faculty Oct 2012 to present  
*Dept. of Ecology, Evolution & Environmental Biology, Columbia University*

Adjunct Assistant Professor Sep 2013 to 2018  
*Dept. of Earth and Environmental Sciences, Columbia University*

<sup>1</sup>Lamont Assistant Research Professor July 2010 to June 2015  
*Lamont-Doherty Earth Observatory, Columbia University*

Storke Doherty Lecturer July 2008 to 2013  
*Dept. of Earth and Environmental Sciences &  
Lamont-Doherty Earth Observatory, Columbia University*

<sup>1</sup>Doherty Associate Research Scientist July 2006 to 2010  
*Lamont-Doherty Earth Observatory, Columbia University*

Postdoctoral Fellow Jan 2005 to July 2006  
*Department of Global Ecology, Carnegie Institution  
Stanford, CA, USA*

### MAJOR RESEARCH INTERESTS

- Indirect consequences of Arctic-boreal warming on tundra flora, fauna, and trophic dynamics
- Role of animals in mediating the impact of Arctic warming on ecological form and function
- Use of field surveys, near/remote sensing, and bioacoustics to study ecological form and function in Arctic tundra

### PUBLICATIONS

Please note that a \* denotes that a graduate student in my lab group is lead author. In addition, I have been following the growing custom in the field of ecology, which is for the PI (myself) to place their name in

the last authorship position on advisee led studies, indicating that the study was produced and led by their lab group.

***Published and accepted journal articles:***

**Boelman**, N.T., Liston, G.E., Gurarie, E., Meddens, A.J.H., Mahoney, P.J., Kirchner, P.B., Bohrer, G., Brinkman, T.J., Cosgrove, C.L., Eitel, J.U.H., Hebblewhite, M., Kimball, J.S., Nolin, A.W., LaPoint, S.D., Pedersen, S.H., Prugh, L.R., Reinking, A.K., Vierling, L.A. (2019) Integrating snow science and wildlife ecology in Arctic-boreal North America, *Environmental Research Letters*, 14(1), DOI: 10.1088/1748-9326/aaec1

Eitel, JUH, Maguire, AJ, **Boelman**, N, Vierling, LA, Griffin, KL, Jensen, J, Magney, TS, Mahoney, PJ, Meddens, AJH, Silva, C, Sonnentag, O. (2019) Proximal remote sensing of tree physiology at northern treeline: Do late-season changes in the photochemical reflectance index (PRI) respond to climate or photoperiod? *Remote Sensing of Environment*, 221: 340-350.

Maguire, AJ, Eitel, JUH, Vierling, LA, Johnson, DM, Griffin, KL, **Boelman**, NT, Jensen, JE, Greaves, HE, Arjan JH Meddens (2019) Terrestrial lidar scanning reveals fine-scale linkages between microstructure and photosynthetic functioning of small-stature spruce trees at the forest-tundra ecotone. *Agricultural and Forest Meteorology*, 269-270.

\*Oliver, R.Y., Ellis, D.P.W., Chmura, H.E., Krause, J.S., Pérez, J.H., Sweet, S.K., Gough, L., Wingfield, J.C., **Boelman**, N.T. (2018) Eavesdropping on the Arctic: Automated bioacoustic reveal dynamics in songbird breeding phenology, *Science Advances*, 4(6), DOI: 10.1126/sciadv.aq1084

Mahoney PJ, Liston GE, LaPoint S, Gurarie E, Mangipane B, Wells AG, Brinkman TJ, Eitel JUH, Hebblewhite M, Nolin AW, **Boelman** N, Prugh LR (2018) Navigating snowscapes: scale-dependent responses of mountain sheep to snowpack properties, *Ecological Applications*, 28(7) 1715-1729. DOI: 10.1002/eap.1773

Chmura, H.E., Krause, J.S., Pérez, J., Asmus, A., Sweet, S.K., Hunt, K.E., Meddle, S.L., McElreath, R., **Boelman**, N.T., Gough, L., and Wingfield, J.C. Late-season snowfall is associated with decreased offspring survival in two migratory arctic-breeding songbird species, *Journal of Avian Biology* (accepted).

Asmus, A., Chmura, H.E., Toke T. Høye<sup>4</sup>, Krause, J.S., Sweet, S.K., Pérez, J., **Boelman**, N.T., Wingfield, J.C and Gough, L. Shrub shading moderates the effects of weather on arthropod activity in arctic tundra, *Ecological Entomology* (accepted).

\*Oliver, R.Y., Ellis, D.P.W., Chmura, H.E., Krause, J.S., Pérez, J.H., Sweet, S.K., Gough, L., Wingfield, J.C., **Boelman**, N.T. (2018) Eavesdropping on the Arctic: Automated bioacoustic reveal dynamics in songbird breeding phenology, *Science Advances* (accepted).

**Boelman**, N.T., Wingfield, J.C., Gough, L., Krause, J.S., Sweet, S.K., Chmura, H.E., and Perez, J.H. (2017) Long-distance migratory songbirds adjust timing of clutch initiation in response to unpredictable and dynamic spring conditions in the Arctic, *Oecologia*, 185(1): 69-80, 10.1007/s00442-017-3907-3

Prager, C.M., Naeem, S., **Boelman**, N.T., Eitel, J.U.H., Greaves, H.E., Heskell M.A., Magney, T.S., Menge, D.N.L., Vierling, L.A., Griffin, K.L. (2017) A gradient of nutrient enrichment reveals nonlinear impacts of fertilization on Arctic plant diversity and ecosystem function, *Ecology and Evolution*, 7(7): 2449-2460, 10.1002/ece3.2863

Magney, T.S., Logan, B.A., Griffin, K.L., Eitel, J.U.H., **Boelman**, N.T., Reblin, J., Abatzoglou, J.T., Greaves, H., Prager, C.M., L., Fortin, Oliver, R.Y., Shen, C., and Vierling, L.A. (2017) Xanthophyll cycle activity in two prominent Arctic shrub species, *Arctic, Antarctic, and Alpine Research*, 49(2): 277-289, 10.1657/AAAR0016-044

Greaves, H.E., Vierling, L.A., Eitel, J.U.H., **Boelman**, N.T., Magney, T.S., Prager, C.M., and B.A., Griffin, K.L. (2017) Applying terrestrial lidar for evaluation and calibration of airborne lidar-derived shrub biomass estimates in Arctic tundra, *Remote Sensing Letters*, 8(2): 175-184, 10.1080/2150704X.2016.1246770

Gersony, J.T., Prager, C.M., **Boelman**, N.T., Eitel, J.U.H., Gough, L., Greaves, H.E., Griffin, K.L., Magney, T.S., Sweet, S.K., Vierling, L.A., Naeem, S. (2016) Scaling thermal properties from the leaf to the canopy in the Alaskan arctic tundra, *Arctic, Antarctic and Alpine Research*, 48(4): 739-754, 10.1657/AAAR0016-013

Krause, J.S., Perez, J.H., Chmura, H.E., Asmus, A., Sweet, S.K., Meddle, S.L., Hunt, K.E., Gough, L., **Boelman**, N.T., and Wingfield, J.C. (2016) The effect of extreme spring weather on body condition and stress physiology in Lapland longspurs and white-crowned sparrows breeding in the Arctic, *General and Comparative Endocrinology*, 237:10-18, 10.1016/j.ygcen.2016.07.015

Krause J.S., Pérez J.H., Chmura H.E., Meddle S.L., Hunt K.E., Gough L., **Boelman** N.T. and Wingfield J.C. (2016) The stress response is attenuated during inclement weather in parental, but not in pre-parental, Lapland longspurs (*Calcarius lapponicus*) breeding in the Low Arctic, *Hormones and Behavior*, 83:68-74, DOI: 10.1016/j.yhbeh.2016.05.018

**Boelman**, N.T., Holbrook, J., Krause, J.S., Greaves, H.E., Chmura, H.E., Perez, J.H., Magney, T.S., Eitel, J.U.H., Wingfield, J.C., Gough, L., Vierling, K.T. and Vierling, L.A. (2016) Airborne laser scanning and spectral remote sensing give a bird's eye perspective on arctic tundra breeding habitat at multiple spatial scales, *Remote Sensing of Environment*, 184:337-349, DOI: 10.1016/j.rse.2016.07.012

Greaves, H., Vierling, L.A., Eitel, J.U.H., **Boelman**, N.T., Magney, T.S., Prager, C.M., and Griffin, K.L. (2016) High-resolution mapping of aboveground shrub biomass in Arctic tundra using airborne lidar and imagery, *Remote Sensing Environment*, 184:361-373, DOI: 10.1016/j.rse.2016.07.026

**Boelman**, N.T., Magney, T.S., Logan, B.A., Griffin, K.L., Eitel, J.U.H., Greaves, H., Prager, C.M. and Vierling, L.A. (2016) Spectral determination of concentrations of functionally diverse pigments in increasingly complex arctic tundra canopies, *Oecologia*, 182:85-97, DOI: 10.1007/s00442-016-3646-x

Perez, J.H., Krause, J.S., Chmura, H.E., Bowman, S., McGuigan, M., Asmus, A., Meddle, A.L., Hunt, K.E., Gough, L., **Boelman**, N.T., Wingfield, J.C. (2016) Nestling growth rates in relation

- to food abundance and weather in the Arctic, *The Auk*, 133(2): 261-272, DOI: 10.1642/AUK-15-111.1
- Krause J.S., Chmura H.E., Pérez J.H., Asmus A., Word K.R., Németh Z., Meddle S.L., Quach L.N., McGuigan M.A., Gough L., **Boelman**, N.T., and Wingfield J.C. (2016) Adrenocortical Responses to Stress on the Leading Edge of a Northward Range Expansion in Arctic Breeding Gambel's White-crowned Sparrow, *Oecologia*, 180(1):33-44, DOI: 10.1007/s00442-015-3447-7
- Magney, T.S., Eitel, J.U.H., Griffin, K.L., **Boelman**, N.T., Greaves, H., Prager, C.M., Logan, B.A., Zheng, G., Ma, L., Fortin, E.A., Oliver, R.Y. and Vierling, L.A. (2016) LiDAR canopy radiation model reveals patterns of photosynthetic partitioning in an arctic shrub, *Agricultural and Forest Meteorology*, 22:78-93, DOI:10.1016/j.agrformet.2016.02.007
- Greaves, H., Vierling, L.A., Eitel, J.U.H., Magney, T.S., **Boelman**, N.T., Prager, C., and Griffin, K.L. (2015) Estimating aboveground biomass of low-stature Arctic shrubs with terrestrial LiDAR, *Remote Sensing Environment*, 164, 26-35, DOI:10.1016/j.rse.2015.02.023
- \*Sweet, S., Griffin, K.L., Steltzer, H., Gough, L., and **Boelman**, N.T. (2015b) Greater deciduous shrub abundance extends the annual period of maximum tundra greenness and increases modeled net CO<sub>2</sub> uptake, *Global Change Biology*, 21(6), DOI: 10.1111/gcb.12852
- Boelman**, N.T., Gough, L., Wingfield, J.C., Goetz, S., Asmus, A., Chmura, H.E., Krause, J.S., Perez, J.H., Sweet, S.K. and Guay, K.C. (2015) Greater shrub dominance alters breeding habitat and food resources for migratory songbirds in Alaskan arctic tundra, *Global Change Biology*, 21(4), 1508-1520, DOI: 10.1111/gcb.12761
- \*Sweet, S., Asmus, A., Rich, M.E., Gough, L., and **Boelman**, N.T. (2015a) NDVI as a predictor of canopy arthropod biomass in the Alaskan arctic tundra, *Ecological Applications*, 25(3), 779-790.
- \*Sweet, S., Gough, L., Griffin, K.L., and **Boelman**, N.T. (2014) Tall deciduous shrubs offset delayed start of growing season through rapid leaf development in Alaskan arctic tundra, *Arctic, Antarctic and Alpine Research*, 46(3):682-697, DOI: 10.1657/1938-4246-46.3.682
- Rich, M.E., Gough, L., and **Boelman**, N.T. (2013) Arctic arthropod assemblages in habitats of differing shrub dominance, *Ecography*, 36, DOI: 10.1111/j.1600-0587.2012.00078.x
- Griffin, K.L., Epstein, D.J., and **Boelman**, N.T. (2013) Maximum photosynthetic electron transport decreases down slope in a small Arctic watershed, *Arctic, Antarctic and Alpine Research*, 45(1): 39-49, doi: <http://dx.doi.org/10.1657/1938-4246-45.1.39>
- Searle, S.Y., Turnbull, M. H., **Boelman**, N.T., Schuster, W.S.F., Yakir, D. and Griffin, K.L. (2012) Urban heat island effect in New York City promotes growth in Northern red oak seedlings, *Tree Physiology*, 32(4): 389-400, doi: 10.1093/treephys/tps027
- Boelman**, N.T., Rocha, A.V. and Shaver, G.R. (2011b) Understanding burn severity sensing in Arctic tundra: Exploring vegetation indices, sub-optimal assessment timing and the impact of increasing pixel size, *International Journal of Remote Sensing*, 32(22): 7033-7056
- Boelman**, N.T., Gough, L., McLaren, J.R. and Greaves, H. (2011a) Does NDVI reflect variation in the structural attributes associated with increasing shrub dominance in arctic tundra? *Environmental Research Letters*, 6, doi:10.1088/1748-9326/6/3/035501
- Boelman**, N.T., Asner, G.P., Hart, P.J., and Martin, R.E. (2007) Uncovering Multi-trophic Biotic

Resistance to Biological Invasion in Hawai'i using Bioacoustics, Field Surveys, and Airborne Remote Sensing, *Ecological Applications*, 17(8): 2137-2144

Whitehead D., **Boelman**, N.T., Turnbull, M.T., Griffin, K.L., Tissue, D.T., Barbour, M.M., Hunt, J.E., Richardson, S.J., and Peltzer, D.A. (2005) Photosynthesis and reflectance indices for rainforest species in ecosystems undergoing progression and retrogression along a soil fertility chronosequence in New Zealand, *Oecologia*, 144: 233-244

**Boelman**, N.T., Stieglitz, M., Griffin, K.L., and Shaver, G.R. (2005) Inter-annual variability of NDVI in response to long-term warming and fertilization in wet sedge and tussock tundra, *Oecologia*, 143: 588-597

**Boelman**, N.T., Stieglitz, M., Rueth, Sommerkorn, H. M., Griffin, K.L., Shaver, G.R., and Gamon, J.A. (2003) Response of NDVI, Biomass, and Ecosystem Gas Exchange to Long-Term Warming and Fertilization in Wet Sedge Tundra, *Oecologia*, 135:414-421

### ***Published report:***

Epstein, H.E., Bhatt, U.S., Reynolds, M.K., Walker, D.A., Bieniek, P.A., Tucker, C.J., Pinzon, J., Myers-Smith, I.H., Forbes, B.C., Macias-Fauria, M., Boelman, N.T., Sweet, S.K. (2015) Tundra Greenness [in *Arctic Report Card 2015*], <http://www.arctic.noaa.gov/reportcard>.

Kasischke, E.S, Hayes, D.J., Billings, S., **Boelman**, N.T., plus 21 more (2014) A Concise Experimental Plan for the Arctic-Boreal Vulnerability Experiment, <http://above.nasa.gov/acep.html>

### ***Published datasets:***

Vierling, L.A., Eitel, J.U.H., **Boelman**, N.T., Griffin, K.L., Greaves, H., Magney, T.S., Prager, C., Ajayi, M., and Gibson, R. (2013a) Bare earth LiDAR dataset for Toolik Field Station, AK, and nearby field sites along Dalton Highway. doi: 10.7923/G4057CV5

Vierling, L.A., Eitel, J.U.H., **Boelman**, N.T., Griffin, K.L., Greaves, H., Magney, T.S., Prager, C., Ajayi, M., and Gibson, R. (2013b.) Four-band, 5cm resolution orthophotographs of Toolik Field Station, AK, and nearby field sites along Dalton Highway. doi: 10.7923/G4VD6WCW.

## **POPULAR PRESS**

Audubon Magazine: Multi-page article *Out of Sync* Sept-Oct 2013  
written by Amanda Mascarelli

<http://www.audubonmagazine.org/articles/climate/arctic-researchers-race-uncover-effects-global-warming-songbirds?>)

CNN Opinion piece: *Next global warming worry: Thawing tundra* Sept 25 2012  
(<http://www.cnn.com/2012/09/25/opinion/boelman-arctic-tundra/index.html>)

Metro International: Quoted in the newspaper on the topic of climate change and Arctic breeding songbirds Fall 2012

Wired UK, quoted in magazine on the topic of 'Pop Up Ecosystems' Fall 2012

New York Times 'Scientist at work' May 26-June 8 2011  
Research blog from the North Slope of Alaska  
(<http://scientistatwork.blogs.nytimes.com/author/natalie-boelman/>)

## RESEARCH GRANTS AWARDED

- (3 years) NASA – Terrestrial Ecology, ABoVE Phase 2 2019 - 2022  
*A data-model fusion approach to quantifying socio-ecologic and -economic consequences of changing snow- and ice-scapes on natural resources and transportation networks in ABoVE*  
PIs: **Boelman**, N.T. (lead), T. Brinkman, L. Prugh, G. Liston, A. Reinking
- (5 years) NSF – Polar Programs, Arctic Social Sciences 2018 - 2023  
*Collaborative Research: Navigating the New Arctic (NNA): Soundscape ecology to assess environmental and anthropogenic controls on wildlife behavior*  
PIs: **Boelman**, N.T. (lead), T. Brinkman, M. Mandel, G. Liston, A. Reinking
- RISE Grant, Columbia University 2018 - 2019  
*Evolution in the Arctic: Genomic reconstruction of microbial, plant and animal communities during the Holocene*  
PIs: Shaman, J. (lead), J. Nichols, N.T. **Boelman**, D. Peteet, S. Anthony
- Climate Center, Lamont-Doherty Earth Observatory 2017 - 2019  
*Birds of a feather: Isotopic analysis to complement GPS tracking of American robins to understand migratory routes and habitat usage*  
PIs: Oliver, R.Y. (lead), N.T. **Boelman**
- Catalyst Grant, Columbia University 2017 - present  
*Reducing the catastrophic effects of Oak Wilt disease through early detection and ecologically sound decision making*  
PIs: Griffin, K.L. (lead), N.T. **Boelman**, W. Schuster
- (5 years) NSF - Polar Programs, Arctic Natural Sciences 2016 - 2021  
*Collaborative Research: Adding animals to the equation: assessing herbivore impacts on carbon cycling in northern Alaska*  
PIs: **Boelman**, N.T. (lead), L. Gough, K.L. Griffin, J. McLaren, E. Rastetter, R. Rowe
- (4 years) NASA - Terrestrial Ecology, ABoVE Phase 1 2015 - 2019  
*Animals on the move: Remotely based determination of key drivers influencing movements and habitat selection of highly mobile fauna throughout the ABoVE study domain*  
PIs: **Boelman**, N.T. (lead), G. Bohrer, J. Eitel, M. Hebblewhite, L. Prugh, L. Vierling
- (4 years) NASA - Terrestrial Ecology 2015 - 2019  
*LiDAR, passive spectral, and ecophysiological approaches to link Forest Tundra Ecotone structure and function*  
PIs: Eitel, J. (lead), N. **Boelman**, L. Vierling, K. Griffin
- (2 years) ROADS Grant Provost Ignition Funding Program, Columbia University 2015-2017  
*Listening to the Arctic Fauna*  
Co-PIs: N. **Boelman** and D. Ellis from the Dept. of Electrical Engineering, Columbia University
- (3 years + NCE) NASA - Terrestrial Ecology Program 2013 - 2016  
*Quantifying thresholds in arctic tundra vegetation structure and*

*ecosystem function using LiDAR and multispectral remote sensing*  
 PIs: Vierling, L. (lead), N.T. **Boelman**, K.L. Griffin, J. Eitel

Climate Center, Lamont-Doherty Earth Observatory 2013-2014  
*Understanding drivers of changing arthropod communities on the tundra as Arctic warming facilitates woody deciduous shrub expansion,*  
 PI: **Boelman**, N.T.

Climate Center of Lamont-Doherty Earth Observatory 2011-2012  
*Using ancient DNA to explore co-variation between migratory songbirds, climate and shrub abundance in Arctic tundra ecosystems from LGM to present*  
 PIs: **Boelman**, N.T., D. Peteet

(5 years) NSF-Office of Polar Programs, Arctic Natural Sciences 2010-2014  
*Collaborative Research: Effects of warming-induced increases in shrub abundance and changing seasonality on migratory songbirds in Alaskan arctic tundra*  
 PIs: **Boelman**, N.T. (lead), L. Gough, J.C. Wingfield

(3 years) NSF-Office of Polar Programs 2009-2012  
*Fire In the Arctic Landscape: Impacts, Interactions And Links to Global and Regional Environmental Change*  
 PIs: Shaver, G.R. plus N.T. **Boelman**, M.S. Bret-Harte, W.B. Bowden, L.A. Deegan, A.E. Giblin, C.R. Johnson, G.W. Kling, M.C. Mack, E.B. Rastetter, A.V. Rocha

Black Rock Forest Small Grant Consortium Small Grants Program 2008  
*Effects of urbanization on tree physiology using remote sensing*  
 PI: **Boelman**, N.T.

Earth Institute of Columbia University 2008  
*ADVANCE Program Transition Support Grant*  
 PI: **Boelman**, N.T.

Climate Center of the Earth Institute of Columbia University 2001, 2003, 2006, 2008  
 Four separate seed funding awards prior to 2011  
 PI: **Boelman**, N.T.

## AWARDS

LDEO Excellence in Mentoring Award Sep 2015  
 LDEO Excellence in Mentoring Award, Honorable Mention May 2014  
 Carnegie Science Department of Global Ecology Postdoctoral Fellow 2005-2006

## TEACHING

Course Instructor: Earth's Environmental Systems: The Life System (EESC V2300) Spring 2012  
*Department of Earth and Environmental Science, Columbia University* Spring 2015  
 Spring 2016  
 Spring 2017  
 Spring 2018

Seminar Instructor: Treeline Structure and Function (EESC G9500) Spring 2016

*Department of Earth and Environmental Science, Columbia University*

Instructor: Undergraduate student tutorial (EESC W3000) Fall 2014

Course Instructor: Senior Research Seminar (EESC W3901) Spring/Fall 2012  
*Department of Earth and Environmental Science, Columbia University* Spring/Fall 2013  
Spring 2014

Seminar Instructor: Plant Physiology & Ecology (EESC G9500) Fall 2012  
*Department of Earth and Environmental Science, Columbia University* Fall/Spring 2013

Seminar Instructor: Arctic Tundra & Climate Change (EESC G9500) Fall 2011  
*Department of Earth and Environmental Science, Columbia University*

## **POSTDOCTORAL & STUDENT ADVISING**

### **Postdoctoral Scientists:**

Scott LaPoint Fall 2016 – Fall 2018  
Shannan Sweet Fall 2015

### **Graduate Students:**

*Dept. of Earth and Environmental Science, Columbia University*

Doctoral Thesis Committee Member: Rose Oelkers 2018 - present  
Co-advisor for Doctoral Thesis: Elizabeth Min 2017 - present  
Primary Doctoral Thesis Advisor: Ruth Oliver 2013 - 2018  
Doctoral Thesis Committee Member: Angelica Patterson 2012 - 2018  
Primary Doctoral Thesis Advisor: Shannan Sweet 2010 - 2015

*Dept. of Ecology, Evolution & Environmental Biology, Columbia University*

Doctoral Thesis Committee Member: Shailee Shah Fall 2016 - present  
Co-advisor for Doctoral Thesis: Johanna Jensen Fall 2016 - present  
Doctoral Thesis Committee Member: Case Prager 2012 - 2017

*Department of Forest, Rangeland, and Fire Sciences, University of Idaho*

Doctoral Thesis Committee Member: Heather Greaves 2014 - 2017

### **Undergraduate Students:**

*Dept. of Earth and Environmental Science, Columbia University*

Senior Undergraduate Thesis Advisor: Adam Formica 2012 - 2013  
Senior Undergraduate Thesis Advisor: Victoria Diaz-Bonilla 2010 - 2011

*Dept. of Ecology, Evolution & Environmental Biology, Columbia University*

Senior Undergraduate Thesis Advisor: Megan Wilcots 2017- present  
Senior Undergraduate Thesis Advisor: Elizabeth Hiers 2017  
Senior Undergraduate Thesis Advisor: Jess Gersony 2013 - 2014  
Senior Undergraduate Thesis Advisor: Rebecca Gibson 2013  
Senior Undergraduate Thesis Advisor: Moyo Ajayi 2013  
Senior Undergraduate Thesis Advisor: Lacey Harris-Coble 2012



*Dept. of Environmental Science, Barnard College*  
Senior Undergraduate Thesis Advisor: Irina Mateescu  
Senior Undergraduate Thesis Advisor: Elizabeth Tupper  
Spring 2019  
2007 - 2008

## **LDEO AND COLUMBIA SERVICE**

Promotions and Careers Committee  
*Lamont-Doherty Earth Observatory*  
2017 – present

Graduate Student Admissions Committee  
*Department of Earth and Environmental Sciences, Columbia University*  
2017 – present

LDEO representative  
*Arctic Research Consortium of the United States (ARCUS)*  
2016 - present

TA Policies Committee  
*Department of Earth and Environmental Sciences, Columbia University*  
2014 - 2017

Member of Panel Discussion: Fieldwork on Every Continent, Every Ocean  
*LDEO Open House Event*  
Oct 2012

Gave public lecture as part of Spring Public Lecture Series  
*Spring Public Lecture Series of LDEO*  
April 2011

Gave public lecture  
*LDEO Open House Event*  
2010, 2011, 2014, 2017

Hosted exhibit  
*LDEO Open House Event*  
2007, 2016

## **PROFESSIONAL ACTIVITIES**

Co-convened AGU conference sessions  
‘The Resilience and Vulnerability of Arctic and Boreal Ecosystems to Climate Change’  
*American Geophysical Union (AGU) Annual Meeting (Sessions I-V)*  
Dec 2017, 2018

Guest Editor of Special Journal Issue  
‘Resiliency and Vulnerability of Arctic and Boreal Ecosystems to Environmental Change:  
Advances and Outcomes of ABoVE (the Arctic Boreal Vulnerability Experiment)’  
*Environmental Research Letters*  
2017 - present

Working Group lead (appointed)  
*NASA - Terrestrial Ecology’s Arctic Boreal Vulnerability Experiment (ABoVE)*  
Fall 2015 - present

Science Team member (competitive selection)  
*NASA - Terrestrial Ecology’s Arctic Boreal Vulnerability Experiment (ABoVE)*  
2015 - present

Science Definition Team (SDT) member (competitive selection)  
*NASA - Terrestrial Ecology’s Arctic Boreal Vulnerability Experiment (ABoVE)*  
Feb 2013 - June 2014

Led public presentation and panel discussion Nov 2012  
'The Arctic's response to climate warming: Ecosystems, people and  
impacts on the rest of the planet'  
*LDEO and Earth Institute of Columbia University & Québec Government Office in New York*

Co-convened conference session Dec 2011  
'Multi-trophic Level Response to Climate Change in the Arctic Tundra' (B55)  
Co-convenor: Eric Post, Pennsylvania State University  
*American Geophysical Union (AGU) Annual Meeting*

Review journal articles in: *Remote Sensing Environment, International Journal of Remote  
Sensing, Oecologia, Ecology, Global Ecology and Conservation, Global Change Biology,  
Animal Migration, Environmental Research Letters, Trends in Ecology and Evolution*

## TALKS

Departmental Seminar (invited) Jan 2018  
*Dept. of Ecology, Evolution & Environmental Biology  
Columbia University*

Speaker (invited) Jan 14, 2016  
Arctic Matters  
Audience: congressional/federal agencies, NGOs, think tanks, educational institutions, media outlets  
*Polar Research Board, Natihonal Academy of Sciences, Washington DC*

Speaker (invited) Sep 2015  
Unlocking the Mysteries of the Physical World with Data Science:  
A Natural Sciences and Data Sciences Interface Workshop  
*Data Science Institute, Columbia University*

Speaker (invited) Aug 2015  
Ignite Session: Ecology in Earth System Models: What's missing and why is it important?  
*Ecological Society of America (ESA) Annual Meeting*

Colloquium (invited) Oct 2014  
*LDEO*

Seminar (invited) May 2014  
*The Cary Institute for Ecosystem Studies, Millbrook, NY*

Seminar Mar 2014  
*Division of Biology and Paleo Environment, LDEO*

Arctic Long-term Ecological Research (LTER) Station (invited) 2012, 2013, 2014, 2018  
Annual Meeting  
*Ecosystems Center, Marine Biological Laboratory, Woods Hole, MA*

'Topics in 3D - 'Recycle, Rethink, Rebuild' (invited) Sep 2012  
*Parsons The New School for Design, New York, NY*

Departmental Seminar (invited) <i>Dept. of Biological and Environmental Sciences</i> <i>University of Tennessee Chattanooga, Chattanooga, TN</i>	Nov 2011
Workshop on Arctic Issues: Current and future perspectives on research, advocacy and collaboration (invited) <i>Québec Government Office in New York, NY</i>	Apr 2011
Departmental Seminar (invited) <i>Dept. of Ecology, Evolution &amp; Environmental Biology</i> <i>Columbia University</i>	Feb 2010
Panel on Biodiversity and Ecosystem Services in the Arctic (invited) <i>Earth Institute of Columbia University</i>	Dec 2009
Departmental Seminar (invited) <i>Dept. of Ecology, Evolution &amp; Environmental Biology</i> <i>Columbia University</i>	Feb 2007
Departmental Seminar (invited) <i>Dept. of Geography</i> <i>Concordia University, Montreal, QC, Canada</i>	Feb 2006
Departmental Seminar (invited) <i>Dept. of Geography</i> <i>York University, Toronto, ON, Canada</i>	Mar 2006
Seminar (invited) <i>Institute for Forest, Snow and Landscape Research (WSL), Zurich, Switzerland</i>	Jan 2004

## PUBLISHED MEETING ABSTRACTS

<i>American Geophysical Union (AGU)</i> Talk Title: Golden Eagle Migratory Behaviors in Response to Arctic Warming Authors: LaPoint, S., Bohrer, G., Davidson, S.C., Gurarie, E., Mahoney, P., <b>Boelman</b> , N.	Dec 2017
<i>American Geophysical Union (AGU)</i> Talk Title: Eavesdropping on the Arctic: Automated Bioacoustics Promises to Untangle Climate-Induced Shifts in Songbird Migration Authors: Oliver, R., Ellis, D., Gough, L., Chmura, H., Sweet, S.K., <b>Boelman</b> , N.T., Krause, J., Perez, J., Wingfield, J.	Dec 2017
<i>American Geophysical Union (AGU)</i> Poster Title: Assessing the Utility of Temporally Dynamic Terrain Indices in Alaskan Moose Resource Selection Authors: Jennewein, J.S., Hebblewhite, M., Meddens, A.J., Gilbert, S., Vierling, L.A., <b>Boelman</b> , N.T., Eitel, J.	Dec 2017
<i>American Geophysical Union (AGU)</i> Poster Title: Building an archive of Arctic-Boreal animal movements and links to remote sensing data Authors: Handler, M., Davidson, S.C., Bohrer, G., <b>Boelman</b> , N.T.	Dec 2017

- American Geophysical Union (AGU)* Dec 2017  
 Poster Title: Towards lidar-based mapping of tree age at the Arctic forest tundra ecotone.  
 Authors: Jensen, J., Maguire, A., Oelkers, R., Anreue-Hayles, L, **Boelman**, N.T., D/Arrigo, R., Griffin, K.L., Jennewein, J.S, Hiers, E., Meddens, A.J., Russell, M., Vierling, L.A., Eitel, J.
- American Geophysical Union (AGU)* Dec 2017  
 Poster Title: Relating structural growth environment to white spruce sapling establishment at the Forest-Tundra Ecotone  
 Authors: Maguire, A., **Boelman**, N.T., Griffin, K.L., Jensen, J., Hiers, E., Johnson, D.M., Vierling, L.A., Eitel, J.
- Ecological Society of America (ESA)* Aug 2015  
 Talk Title: Adding animals to the equation: Trophic interactions mediate carbon cycling in arctic tundra  
 Authors: **Boelman**, N.T., Gough, L., Griffin, K.L., McLaren, J.R., Rastetter, E., Rowe, R.J.
- Ecological Society of America (ESA)* Aug 2015  
 Poster Title: Arctic breeding songbirds cope with variability in the timing of spring onset  
 Authors: **Boelman**, N.T., Gough, L., Wingfield, J.C., Krause, J.S., Chmura, H.E., Perez, J.H., Asmus, A.L., and Sweet, S.K.
- Ecological Society of America (ESA)* Aug 2015  
 Talk Title: Thermal ecology: The influence of tundra vegetation on local thermal environments and the fate of the arctic permafrost  
 Authors: Naeem, S., **Boelman**, N.T., Eitel, J.U.H., Gersony, J., Greaves, H., Griffin, K.L., Magney, T.S., Prager, C.A., and Vierling, L.A.
- Ecological Society of America (ESA)* Aug 2015  
 Talk Title: Plant diversity effects on carbon cycling in the Arctic  
 Authors: Prager, C.A., **Boelman**, N.T., Greaves, H., Griffin, K.L., Eitel, J.U.H., Magney, T.S., Vierling, L.A., and Naeem, S.
- American Geophysical Union (AGU)* Dec 2014  
 Poster Title: Greater deciduous shrub abundance extends tundra peak season and increases modeled net CO<sub>2</sub> uptake  
 Authors: Sweet, S.K., Griffin, K.L., Steltzer, H., Gough, L., **Boelman**, N.T.
- Society of Integrative and Comparative Biology's (SICB) Annual Meeting* Jan 2014  
 Poster Title: Multi-trophic impacts of shrub dominance on arctic arthropod assemblages  
 Authors: Asmus A.L., L. Gough, N.T., **Boelman**, J.C., Wingfield, S.K., Sweet, J.S., Krause, J.H., Perez, H.E., Chmura
- Society of Integrative and Comparative Biology's (SICB) Annual Meeting* Jan 2014  
 Poster Title: Interannual variability in arctic phenology and reproductive success in the White-crowned sparrow (*Zonotrichia leucophrys gambelii*) and Lapland longspur (*Calcarius lapponicus*)  
 Authors: Chmura, H.E., J.S., Krause, Perez, J.H., S.K., Sweet, A., Asmus, N.T., **Boelman**, L., Gough, J.C., Wingfield

- American Geophysical Union (AGU) Annual Meeting* Dec 2013  
 Poster Title: Quantifying shrub encroachment in Alaska using LiDAR  
 Authors: Magney, T., H., Greaves, L., Vierling, J., Eitel, J., N.T., **Boelman**, K.L., Griffin, C., Prager, M., Ajayi, R., Gibson
- Society of Integrative and Comparative Biology's (SICB) Annual Meeting* Jan 2013  
 Poster Title: Adrenocortical Responses to Stress on the Leading Edge of a Northward Range Expansion in White-crowned Sparrows  
 Authors: Krause, J., J., Perez, S., Sweet, A., Asmus, K., Word, M., Rich, J., Schas, L., Gough, N.T., **Boelman**, J.C. Wingfield
- Society for Integrative and Comparative Biology (SICB) Annual Meeting* Jan 2013  
 Poster Title: Impacts of Changing Seasonality and Potential for Trophic Mismatches in the Arctic.  
 Authors: Krause, J., J., Perez, S., Sweet, A., Asmus, K., Word, M., Rich, J., Schas, L., Gough, J.C., Wingfield, N.T. **Boelman**.
- All Scientists Meeting of the LTER Network* Fall 2012  
 Poster Title: Quantifying the physiology of structurally complex arctic vegetation and implications for ecosystem function in a shrubbier tundra.  
 Authors: Formica, A., K.L., Griffin, N.T., **Boelman**
- All Scientists Meeting of the LTER Network* Fall 2012  
 Poster Title: Effects of increasing shrubs in arctic tundra on associated arthropods and migratory songbirds.  
 Authors: Gough, L., N.T., **Boelman**, J.C., Wingfield, J., Krause, S., Sweet, M., Rich, A., Asmus
- American Geophysical Union (AGU) Annual Meeting* Dec 2011  
 Talk Title: Trophic matches in Northern Alaska: Existing synchrony among climate, vegetation, arthropods and migratory songbirds  
 Authors: **Boelman**, N.T., L., Gough, J.C., Wingfield

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