IGNITE RESEARCH COLLOQUIUM – Planetary Health: People, Particles, and Places

April 16, 2018
Hallie Ford Center #115
4-6 pm
Welcome

COF and CPHHS Ignite Research Colloquium

• F. Javier Nieto, Dean, CPHHS
• Anthony S. Davis, Acting Dean, COF

• Moderators:
• Marie Harvey, Associate Dean, CPHHS
• Anthony S. Davis, Acting Dean, COF
Ignite Agenda and Timeline

• 4:00 – 4:05 Welcome
• 4:05 – 4:35 Session I
  4 presentations; Q&A
  4 presentations; Q&A
• 4:35 – 5:00 Session II
  4 presentations; Q&A
  4 presentations; Q&A
• 5:00 – 6:00 Reception: wine, beer, hors d’oeuvres
Session I
Figure 2: Lumber Mills and Northwest Forest Plan Protected Forestland in Oregon

Mining/Logging workers per 10,000 Oregon


Email: david.Rothwell@oregonstate.edu
Twitter: @davidwrothwell
Web: http://health.oregonstate.edu/rothwell
**My expertise / my contributions**

- Measurement of poverty / financial well-being
- Social assistance / safety net programs
- Social stratification and inequality
- Complex surveys and secondary data
- Oregon

**I seek expertise in**

- Understanding historical changes to natural resource economies in the Pacific Northwest
- Identify *places* in PNW where changes to forest ecosystems have been most and least extreme
- Sustainable forest economies

Email: david.Rothwell@oregonstate.edu
Twitter: @davidwrothwell
Web: [http://health.oregonstate.edu/rothwell](http://health.oregonstate.edu/rothwell)
What We Do
To Reduce Work-related Musculoskeletal Disorders and Injuries at Occupational Ergonomics and Biomechanics (OEB) Laboratory
What We Want to Do with OSU's College of Forestry

* Forestry Workers are also exposed to **high levels of vibration** and other **physical risk** factors and therefore suffers from one of the highest injury rates.

Jay.kim@oregonstate.edu

http://health.oregonstate.edu/labs/oeb
APPLICATIONS OF NANOCHELULOSE

- **Textiles**
  - Self-cleaning textiles
  - Dye sensitized solar cells
  - Paint-on solar cells
  - Dye sensitized solar cells
  - Hydrogen production photocatalysts
  - Fuel cell catalysts

- **Renewable Energy**
  - Battery electrodes
  - Environmental catalysts
  - Waste water treatment
  - Hydrogen production photocatalysts

- **Biomedical**
  - Drug controlled release
  - Bone growth molecular tagging
  - Fungicides
  - Food quality/safety analysis sensors
  - Functional nanocomposites
  - Functional nanocomposites

- **Environment**
  - Self-cleaning textiles
  - High sensitivity sensors
  - Chemical sensors
  - Gas sensors

- **Electronics**
  - Technical textiles
  - Medical textiles
  - Drug delivery
  - Imaging
  - Food processing catalysts

- **Food**
  - Transparent conductive polymer films
  - Reinforced plastics
  - Self-cleaning building surface
  - Self-cleaning building surface

- **Agriculture**
  - Refractive index engineering
  - Industrial catalysts

- **Industrial**
  - Reinforced plastics
  - Self-cleaning textiles

- **Health Care**
  - Medical textiles
  - Drug delivery
  - Imaging
  - Food processing catalysts

- **Food**
  - Control
  - Illustrated aspects of fruit appearance
Meg Krawchuk, Assistant Professor, COF

Wildland Fire, Landscape Ecology, and Conservation Science
Q&A
Previous research has linked presence of green space with stress reduction, recovery from mental fatigue, self-reported health, morbidity, and neighborhood social cohesion.

SHOW: an annual health examination survey (2008-congoing), cluster probabilistic sample of the WI population (census block groups [CBGs], households, persons)—n=2,479 (2008-11)

Green space for (CBG’s):
- Normalized Difference Vegetation Index (NDVI) (from Landsat 5 satellite images and Erdas IMAGINE software at 30m resolution) on July 2009
- % Tree Canopy (2001 National Land Cover Database)
• Mental health assessed using the 42-item Depression Anxiety and Stress Scales (DASS) instrument^2

• Covariates: demographics, marital status, income, education, employment status, length and type of residence, type of health insurance

• >%Tree canopy associated (p<0.05) with >length of residence, >age, >income, married, >private health insurance, <depression, <anxiety, <stress

^2 Lovibond, S.; Lovibond, P.F. Manual for the Depression Anxiety Stress Scales; Psychology Foundation of Australia: Sydney, Australia, 1996

• Effect size comparable to that of type of health insurance

• Confounding, reverse causality possible, but effect persisted in multivariate analyses that included adjustment for length of residence

• “Greening” could be a potential population mental health improvement strategy

Table 3. Difference in Symptoms of Depression, Anxiety and Stress Associated with 25% More Neighborhood Green Space.

<table>
<thead>
<tr>
<th>Green Space Measure</th>
<th>Depression</th>
<th>Anxiety</th>
<th>Stress</th>
</tr>
</thead>
<tbody>
<tr>
<td>25% More Tree Canopy</td>
<td>-1.005 (0.293)**</td>
<td>-0.273 (0.139)</td>
<td>-0.548 (0.261)*</td>
</tr>
<tr>
<td>25% Higher NDVI</td>
<td>-1.369 (0.464)**</td>
<td>-0.512 (0.227)*</td>
<td>-0.701 (0.432)</td>
</tr>
<tr>
<td>25% More Greenspace (NDVI &amp; Tree Canopy Average)</td>
<td>-1.379 (0.397)**</td>
<td>-0.427 (0.185)*</td>
<td>-0.735 (0.349)*</td>
</tr>
</tbody>
</table>

Notes: * p < 0.05; ** p < 0.01; ^8 Numbers in the table represent the adjusted linear regression coefficient (in depression, anxiety, or stress score units) and its standard errors (in parenthesis)—adjusting for length of residence, age, gender, race/ethnicity, educational attainment, household income, marital status, occupational status, and health insurance type.
John Bailey, Professor, COF

Fire, Smoke and Resiliency
Heat-Related Illness among Outdoor Workers

- Jeff Bethel, PhD, CPHHS, BIOPOP, Epidemiology Program

- Outdoor workers are a group vulnerable to heat-related illness

- NIOSH Agriculture, Forestry and Fishing sector
Knowledge Gaps

• Effectiveness of different training options

• Beliefs (often culturally grounded) that may conflict with accepted science

• Impacts of heat production and cooling
  • Heat load generated by specific tasks/jobs
  • Effects of various work/rest patterns and cooling aids on core temp, heat dissipation rate, productivity, etc.
  • Workers’ behavioral responses to training and adjustments in provision of water and other beverages

• Measures of dehydration
Post-Occupancy Performance Evaluations of Mass Timber Buildings

SMART-CLT

Living Lab @Peavy Hall
Wood and Human Perception of Comfort
Acknowledgments

The SMART-CLT and the Living Lab @ Peavy Hall project are conducted through the TallWood Design Institute and funded by the U.S. Department of Agriculture’s Agricultural Research Service.

They are also supported by the National Institute of Food and Agriculture, U.S. Department of Agriculture, McIntire Stennis project under 1009740.
Session II
Ian Munanura

Adversity
- External
- Internal

Resilience
- Hardiness/Emotional Strength/Coping coherence

Resources
- Financial/Natural/Social/Human

Human Well-being Perception

Forest Dependence
- For Income & Subsistence Livelihoods

Perceived Impact Of Tourism/Forests
- Positive
- Negative

Resilient WB

Durable WB

Secure WB

Vulnerable WB

Ongoing Research In Oregon

Ongoing Research In East Africa & Southeast Asia

Seeking Collaborators To Publish Available Data, And Use Findings To Scale-Up These Ideas Into a Grant Proposal
Atmospheric Hg: Hg(0), oxidized to Hg(II), deposited to earth’s surface, microbially methylated, biomagnified in the aquatic food web.

Forests: Stomatal uptake of atmospheric Hg, throughfall, litterfall, forest fires release Hg.
OSU Mercury Speciation Lab (Milam 005)
Analyze total mercury and methylmercury in all matrices

Environmental matrices (aqueous and solid-phase): precipitation, sediment, pore water, surface water, storm water, sanitary sewage overflows, etc.

Human biomarkers: Blood, urine, stool, hair, meconium, etc.
Public Perceptions of Health Issues Associated with Recreation, Wildlife, & Forestry

Education
- PhD, Human Dimensions of Natural Resources, Colorado State Univ.
- MA, Geography, Univ. of Victoria (Canada, eh 😊)
- BA, Geography & Environmental Studies, Univ. of Victoria

Teaching
- FES/TRAL 251 Recreation Resource Management
- FES/TRAL 353 Nature, Eco, & Adventure Tourism
- FES 523 Quantitative Analysis in Social Science (survey analysis)

Other
- Director, NATURE (Natural Resources, Tourism, & Recreation) Studies Lab (nature.forestry.oregonstate.edu)
- Editor of the international journal Human Dimensions of Wildlife

Mark Needham
Professor
Forest Ecosystems & Society
Recent Research Associated With Health Issues (mostly survey based research)

- Public perceptions of possible health risks associated with chronic wasting disease (CWD) in deer, elk, moose across multiple US states

- Resident health constraints (e.g., poor health, physical limitations) & health benefits (e.g., physical, mental, stress) associated with recreating in Portland parks & natural areas

- Public perceptions of risks (including food risks) associated with using genetic modification to restore the American chestnut tree (nationwide study)

- Public attitudes, tradeoffs (e.g., community health vs. economic benefits), & perceptions of risks associated with aerial herbicide spraying on intensively managed private forestlands in Oregon

- User conflicts & health / safety associated with snorkeling & scuba diving with manta rays in Hawaii

- Stakeholder attitudes toward crime, management, & health / safety associated with poaching of rhinoceros in South Africa (part of a new initiative to build research program in Africa)
Spatial Health Lab: Opportunities to Link Environmental Epidemiology and Planetary Health

Perry Hystad (PI), Andy Larkin (Postdoc), Leanne Cusack (Postdoc), Mary Willis (PhD), Ying Wang (PhD), John Paul Bigouette (PhD), Kwadwo Boakye (PdD)
PURE-Air: Global Cohort Study

Healthy Built Environments

Planetary Health

Climate Change

Ecosystem services
Q&A
Reem Hajjar, Assistant Professor, COF

FoLIAGe: Forests, Livelihoods, Institutions, and Governance
Protecting the Logging Workforce: Development of Innovative Logging Techniques for a Safer Working Environment

John Sessions, Professor Forest Engineering, Resources, and Management
John Sessions  
Forest Engineering

Francisca Belart  
Harvesting/Extension

Woodam Chung  
Forest Operations

Tamara Cushing  
Economics/Extension

John Garland  
Logger Safety

Laurel Kincl  
Occupational Health/Safety

Ben Leshchinsky  
Geotechnical Engineering

Jeff Wimer  
Logging Management
Using a Health Equity Lens to Visualize Resource Availability and Accessibility

- Community Food and Physical Activity Audit
- HEALth MAPPSTM
- Story Maps

Deborah H. John, PhD, MS
Associate Professor, BPHS
and Extension Specialist, Health Equity and Place

Tammy Winfield, MS
Faculty Research Assistant, Community Mapping and Data Visualization

College of Public Health and Human Sciences
Visualizing Availability and Access

Data Sources

- Oregon Department of Human Services & Oregon Health Authority (2014)
- U.S. Census Bureau (2015)
- U.S. Department of Agriculture, Food and Nutrition Service-SNAP Retailer Locator (2017)

School Location
Linn Co. Spatial Access
- Within 2 miles
- 2-5 miles
- 5-10 miles

Public Park Location

Extension Expertise and Technical Assistance

- Greater Albany SD
- Lebanon SD
- Sweet Home SD
Forest Economics
Olli-Pekka Kuusela
Assistant Professor
FERM Department
Research

• Policy instrument design.
• Development economics.
• Topics in forest economics:
  • Wildfire economics (risk and uncertainty)
  • Forest products markets and trade

• Valuation: market and non-market goods and services.
Q&A
Thank you –
Please join us at the reception!