

Peter J. Gag

Address: HC 83 Box 8070 • Cascade, Idaho 83611

E-mail Address: pjgag@uidaho.edu

Areas of Interest

Tree water relations

The influence of terrain and abiotic variables on organisms

Developing practical field applications to assist in management

Developing applications for new technologies in ecological research

Education

University of Idaho, Moscow, ID • *Master of Science in Forest Resources*, August 2009 (GPA: 3.92/4.0)

Master's thesis, "The effect of thinning on whole-tree transpiration and gas exchange in Douglas-fir of northern Idaho." August 2009.

University of Minnesota, St. Paul, MN • *Bachelor of Science in Natural Resources & Environmental Studies*, June 1999

Related Publications

- Liang Wei, John D. Marshall, Timothy E. Link, Kathleen L. Kavanagh, Enhau Du, Robert E. Pangle, Peter J. Gag, Nerea Ubierna. 2013. Constraining 3-PG with a new $\delta^{13}\text{C}$ sub-model: a test using the $\delta^{13}\text{C}$ of tree rings. *Plant Cell and Environment*.
- Nerea Ubierna Lopez, Arjun S. Kumar, Lucas A. Cernusak, Robert E. Pangle, Peter J. Gag, and John D. Marshall. 2009. Storage and transpiration have negligible effects on $\delta^{13}\text{C}$ of stem CO_2 efflux in large conifer trees. *Tree Physiology*. 29:1563-1574.
- Erin M. Berryman, Nerea Ubinera Lopez, Peter Gag, Kathleen L. Kavanagh, and John D. Marshall. Partitioning respiration fluxes in a forested mountainous ecosystem using natural abundance of stable carbon isotopes (Poster 2008).
- Kathleen L. Kavanagh, Steve W. Blecker, Robert Pangle, and Peter Gag. 2007. What trees do at night when no one is looking: Impacts of elevation on hydraulic redistribution in mountainous terrain.

Employment and Experience

Research Scientist (3/2013 - present)

University of Idaho College of Natural Resources

Taylor Wilderness Research Station, Cascade, ID 83611

Duties and Responsibilities:

- Manage Taylor Wilderness Research Station.
- Instruct ecology field methods.
- Coordinate student programs.
- Lead student outings.
- Facilitate student learning and personal and interpersonal development in a residential setting.
- Participate in the review process of applicants for internships and semester programs.
- Coordinate facilities operation with regulatory agency personnel.
- Maintain and install research instrumentation for various projects and monitoring.
- Develop collaborations with organizations, agencies, and universities.
- Use an assortment of research equipment and methods to acquire data for a variety of research and regulatory topics.
- Act as on-site support for research projects and equipment.
- Collaborate with agency personnel to acquire research needs.
- Maintain all aspects of operations and facility.

Research Assistant/ Biological Science Technician (6/2012 – 2/2013)

California Forestry Association and the USDA Forest Service

Pacific Southwest Research Station, Redding, CA 96002

Duties and Responsibilities:

- Hired to work on three projects within the Creeks II Forest Restoration Project in the Lassen National Forest.
 - Enhancing the Health and Function of an Oak Dominant Stand in the Storrie fire: What is an Appropriate Stand Density?
 - Radial Release of Large Trees in a Mixed-Conifer Forest: Quantifying Radius Distance
 - Determining Canopy Cover Effects on Understory Development and Their Potential Interactions with Disturbance Methods in a Ponderosa Pine Plantation, Mixed-Conifer, and True-Fir Stand
- Edited project proposals and developed project logistics and implementation plan for the above projects.
- Worked with sub-meter accuracy DGPS and handheld Trimble Nomad computer.
- Integrated field measurements using ArcPad with database information in ArcMap projects.
- Measured canopy Leaf Area Index using the LiCor Biosciences LAI-2000 Plant Canopy Analyzer.
- Measured soil moisture using the Delta T Devices PR2 profile probe and HH2 handheld soil moisture meter.
- Worked with the LiCor Biosciences Li-3000c Portable Area Meter.
- Used the LiCor Biosciences Li-6400xt Portable Photosynthesis System.
- Used hemispherical photography to help determine canopy cover.
- Wrote CRBasic programs for Campbell Scientific CR200, CR1000, and CR10X series dataloggers.
- Used Brown's Planar Intercept sampling for Fuels and biomass, as well as sample quadrat frames.

Biological Science Technician (temp. seasonal GS-0404-07) (3/10 – 10/10, 4/11 – 11/11, and 4/12 – 6/12)

USDA Forest Service, Nez Perce-Clearwater National Forest, Orofino, ID 83544

Duties and Responsibilities:

- Worked with and maintained contacts with private contractors and agency employees to ensure adherence to Federal contracts.
- Adhered to complex policy and regulatory standards across state, public, and private ownerships to assure assignment completeness.
- Developed training materials and conducted training sessions for partners, contractors, and Forest Service personnel regarding GPS based handheld data recorders and data collection following Forest Service practices and proprietary software use.
- Inspected inventory and treatment of non-native invasive weed species on cooperator and Forest Service ownerships.
- Responsible for all aspects of data cleaning and collection, as well as database entry for the Clearwater National Forest's non-native invasive weed inventory/treatment program.
- Extensive use of ESRI ArcGIS and ArcPad software to manipulate data, produce maps, and generate information to help guide work during all stages of individual projects.
- Participated in operational or planning meetings to discuss Invasive Weeds program milestones or activities.
- Participated in contract awarding committees to meet USFS management objectives.
- Gathered spatial and temporal data to help determine managerial practices and implications to future and ongoing projects.

- Evaluated data to assist in annual reporting of unit accomplishments and determination of specific program objectives.
- Consulted agency manuals for guidance on standard procedures and employed judgment to determine a non-standardized approach when situations arose.

Graduate Research Assistant and Technician (9/04 – 6/09)

University of Idaho, Department of Forest, Rangeland, and Fire Sciences, Moscow, ID 83844

Duties and Responsibilities:

Thesis Project: “The effect of thinning on whole-tree transpiration and gas exchange in Douglas-fir of northern Idaho.”

- Independently developed, designed, constructed, and carried out all aspects of a research project including complex equipment systems and data collection for the evaluation of stand density reduction on tree physiological and morphological characteristics.
- Determined procedures that incorporated common forest stand measurement methods with electronically acquired site and environmental data to quantify harvest effects in complex terrain.
- Hand crafted and installed heat dissipation sap-flux sensors for instantaneous measurement of tree water use.
- Incorporated common management tools – growth increment, BAI, MAI, PAI, SDI, growth efficiency, diameter class distributions, and leaf area measurements – to evaluate hypotheses and calculate above ground biomass and fuel loading.
- Collected stand measurements using an assortment of analytical tools – GPS, clinometer, Spiegel Relaskop, increment borers, laser range finders, diameter tapes, ceptometer, heat dissipation sap flow sensors, Campbell Scientific data loggers and multiplexer, LiCor 6400, pressure chamber, Decagon Devices soil moisture sensors.
- Continually evaluated the data collection processes to improve on and maintain efficiency and accuracy.
- Design and constructed renewable power supplies using solar and wind energy within the dense forest canopy of a remote site.
- Used tree-climbing equipment to access forest canopy for sampling and instrument installations.
- Performed repeated tree ascensions for non-destructive sampling of canopy photosynthetic rates.
- Worked independently and in conjunction with team members to manage logistical issues and coordinate multiple data collection processes for interdisciplinary analysis.
- Supervised field technicians throughout all periods and processes of experiment.
- Collected data and conducted relative research to produce a publishable document that was statistically supported and thoroughly evaluated using current research methods and knowledge.
- Generated an extensive database for evaluation and statistical analyses.
- Performed sample analysis in accordance with established methods, procedures, techniques, and statistical methods.
- Prepared and analyzed vegetation samples prior to evaluation using a gas chromatograph mass spectrometer for determination of isotopic composition.
- Used a GPS total station for determination of baseline points for remote sensing of snow depth.
- Collaborated with the Agricultural Research Service on a project in the Owyhee Mountains in southern Idaho.

Forest Technician and Volunteer (10/07 – 3/10)

University of Idaho Experimental Forest, College of Natural Resources, Moscow, ID 83844

Duties and Responsibilities:

- Forest Technician
 - Employed point sampling and fixed radius plots for data collection of over and understory vegetation characteristics – bole taper, height, DBH, age, growth increment, regeneration

- survey – using standard equipment – Spiegel Relaskop, prisms, clinometer, DBH tape, increment bore.
- Evaluated stand structural and compositional characteristics in conjunction with the indication of pests and/or mortality to help determine the appropriate silvicultural system to support the forest management plan.
- Led work crews through an assortment of common forest management activities while organizing logistical and technical variables.
- Conducted herbicide application for control of invasive weeds species on forest right-of-ways.
- Volunteer – Assisted in conducting prescribed burning, timber sale marking, property line delineation, and road construction evaluation to assure appropriate application of best management practices and overall accordance with contract specifications and the forest management plan.

Associate and Substitute Teacher (8/02 – 5/04)

Lower Kuskokwim School District, Kasigluk, AK 99609

Duties and Responsibilities:

- Taught high school Algebra 1 and 2.
- Substitute taught all age groups from kindergarten through high school.
- Followed Federal, state, and district policies and procedures in a Yup'ik Eskimo first language environment.

Environmental Technician (11/00 – 9/01)

Pace Analytical Field Services Division, Minneapolis, MN 55414

Duties and Responsibilities:

- Performed automated Industrial Wastewater Sampling to determine facility effluent (dissolved O₂, Total Suspended Solids, regulated pollutants).
- Interacted with clients to confirm discharge and sampling specifics.
- Use of monitoring and flow measurement devices (flow meters, weirs, ISCO automatic water sampler, and O₂ and pH meters).
- Worked on a multi-million dollar quality control project for the 3M hazardous waste incinerator in Cottage Grove, Minnesota.

Fisheries Technician Intern (6/99 – 10/99)

Minnesota DNR, Grand Marais Area Fisheries Office, Grand Marais, MN 55604

Duties and Responsibilities:

- Conducted limnological surveys and assessments following DNR policies and procedures.
- Communicated with the recreating public in field and office settings.
- Extensive use of aerial imagery and topographic maps to identify sampling locations.
- Navigated to remote survey locations using GPS and common orienteering methods.
- Sampled fish using common capture methods for determining population characteristics for management purposes (gill netting, trap netting, and seining).
- Worked extensively in the Boundary Waters Canoe Area Wilderness, stocking and sampling fish populations and aquatic plant species.

Electrical technician (10/98 – 6/99)

Industrial Automation Engineering, Ham Lake, MN 55304

Duties and Responsibilities:

- Constructed control panels from engineering blueprints for electromechanical automation of industrial processes.
- Used an assortment of hand and power tools to prepare and mount panel components for wiring.

- Operated a counterbalanced sit-down forklift to load and unload parts and completed panels.

Computer Skills

Windows 98/NT/2000/XP, MS Office 2004 and 2007 (Word, Excel, PowerPoint), MS Access, ESRI ArcGIS and ArcPad, Forest Vegetation Simulator (FVS), statistical packages (SAS and R), Forest Characterization and Classification System (FCCS), Consume 3.0, and CRBasic for Campbell Scientific Dataloggers.

Forest Service Specific Computer Skills

Forest Activities Tracking System (FACTS user and editor), Invasive Species extension.

Other Employment and Non-Employment Experience

- Wilderness First Responder Certified.
- Surveying and orienteering.
- Setting small mammal surveying trap lines.
- Constructing drift fences and traps.
- American Heart Association, Heartsaver first aid with annual refresher.
- USFS certified vehicle and ATV use.
- Certified S130 and S190 (red card) wildland firefighter training (3/99).
- Certified Idaho Department of Agriculture Professional Herbicide Applicator.
- Completed 40 hour HAZWOPER (Hazardous Waste Operations and Emergency Response).
- Trained in Confined Space Entry.
- Use of Daubenmires, Line Intercept, and Point Intercept sampling for vegetation characteristics.
- Completed the Arthur Carhart National Wilderness Training Center Online Courses.