

Northwest Scientific Association 81st Annual Meeting
University of Washington, Seattle

March 25 – 28, 2009

Program Schedule

WEDNESDAY, MARCH 25

- 4:00 – 10:00 pm Registration. Hotel Deca Lobby, 4507 Brooklyn Ave NE
- 4:30 – 6:30 pm Northwest Scientific Association Board Meeting - Executive Board Room, Hotel Deca
- 6:30 – 10:00 pm Evening Social - The Governor Room, Hotel Deca

THURSDAY, MARCH 26

7:30 am – 12:00 Registration in Kane Hall Lobby

Session 1: Plenary Session: Historical Changes in Climate and Environment
Room: Kane Hall 120
Moderator: Patrick Pringle

- 8:30 WELCOME and INTRODUCTION. Steve Rust and Katherine Glew
- 8:45 **KEYNOTE ADDRESS:** THE GREAT WARMING, OR THE STORY OF THE SILENT
ELEPHANT IN THE ROOM. Brian Fagan, University of California, Santa Barbara CA.
- 9:45 Break
- 10:15 ONE MILLION YEARS OF GLACIERS AND THE ORIGIN OF PUGET SOUND. Derek
B. Booth, University of Washington and Stillwater Sciences Inc., Seattle WA.
- 11:00 VEGETATION HISTORY OF WESTERN WASHINGTON. Jan A. Henderson, USDA
Forest Service, Mt. Baker-Snoqualmie National Forest, Everett WA.
- 12:00 Lunch

12:00 – 4:00 pm Registration in Mary Gates Hall Commons

Session 2: Forest Science for the Future Symposium

Room: Johnson Hall 102

Moderator: Robert Edmonds

- 1:20 WHAT FOREST RESEARCH MIGHT BE RELEVANT IN AN ERA OF INSTABILITY AND SURPRISE? Jerry Franklin, College of Forest Resources, University of Washington, Seattle WA.
- 2:00 ASSESSING POTENTIAL CLIMATE IMPACTS ON SPECIES AND POPULATIONS. Joshua Lawler, College of Forest Resources, University of Washington, Seattle WA.
- 2:40 Break
- 3:20 PLANT GROWTH-PROMOTING BACTERIA OF BIOENERGY CROP PLANTS. Sharon Doty, College of Forest Resources, University of Washington, Seattle WA.
- 4:00 OPPORTUNITIES AND BARRIERS TO USING FOREST BASED BIOMASS FOR THE PRODUCTION OF RENEWABLE ENERGY AND RENEWABLE FUELS. Rick Gustafson, Larry Mason, John Calhoun, Bruce Lippke, and Natalia Raffaeli, College of Forest Resources, University of Washington, Seattle WA.

Session 3: Restoration Ecology

Room: Johnson Hall 075

Moderator: Jonathan Bakker

- 1:20 RESTORATION OF NATIVE PLANT COMMUNITIES AFTER ROAD DECOMMISSIONING IN THE NORTHERN ROCKY MOUNTAINS. Ashley S. Grant and Cara R. Nelson, College of Forestry and Conservation, University of Montana, Missoula MT.
- 1:40 RECONSTRUCTION OF OLD-GROWTH FOREST STAND STRUCTURE AND COMPOSITION FOR TWO STANDS HARVESTED AROUND 1930 ON THE OLYMPIC PENINSULA, WASHINGTON. David H. Peter and Constance A. Harrington, USDA Forest Service, Pacific Northwest Research Station, Olympia WA.
- 2:00 GARRY OAK RESTORATION: SEEDLING RESPONSES TO POST-PLANTING TREATMENTS IN CENTRAL WASHINGTON. Laura Blume and Jonathan D. Bakker, College of Forest Resources, University of Washington, Seattle WA.
- 2:20 RESTORING FOREST HEALTH IN WASHINGTON STATE PARKS. Robert Fimbel and Tom Ernsberger, Stewardship, Washington State Parks, Olympia WA.
- 2:40 Break
- 3:20 RESTORATION OF WESTERN OREGON MONTANE MEADOWS FOLLOWING CONIFER INVASION. Charles B. Halpern and Ryan D. Haugo, College of Forest Resources, University of Washington, Seattle WA.
- 3:40 THE EFFECTS OF TWO FORMS OF CARBON ON A NON-NATIVE GRASSLAND PLANT COMMUNITY. Rachel Mitchell and Jonathan D. Bakker, College of Forest Resources, University of Washington, Seattle WA.
- 4:00 TOWARDS RECOVERY OF GOLDEN PAINTBRUSH: MONITORING AND OUTPLANTING SITE SELECTION. Peter W. Dunwiddie, The Nature Conservancy, Seattle WA; Joseph L. Arnett, Washington DNR, Natural Heritage Program, Olympia WA.

- 4:20 THE IMPACT OF MULTIPLE SEVERE WILDFIRES ON SAGEBRUSH STEPPE VEGETATION. Jonathan D. Bakker, Eva Dettweiler-Robinson, G. Matt Davies, College of Forest Resources, University of Washington, Seattle WA; Peter Dunwiddie, Jim Evans, The Nature Conservancy, Seattle WA; Sonia A. Hall, The Nature Conservancy, Wenatchee WA; Janelle Downs, Pacific Northwest National Laboratory, Richland WA; Michael Marsh, Washington Native Plant Society, Seattle WA.

Session 4: Lichen Workshop

Room: Hitchcock Hall 226

Moderator: Katherine Glew and Richard Droker

- 1:20 Crusts on Rocks and Other Problematic Collections

Social Hour and Banquet

Burke Museum of Natural History and Culture

- 6:00 pm Social Hour: Hosted Bar, Appetizers and Exhibit Viewing
Burke Museum of Natural History and Culture
- 7:00 pm Banquet: Burke Museum of Natural History and Culture
Speaker: Cliff Mass, Professor of Atmospheric Sciences and author of "The Weather of the Pacific Northwest"

FRIDAY, MARCH 27

7:30 - 12:00 Registration in Mary Gates Hall Commons

12:00 – 1:20 Northwest Scientific Association Annual Membership Meeting and Luncheon – Mary Gates Hall Commons

Session 5: Assembling the Geologic History of the Pacific Northwest Symposium

Room: Johnson Hall 102

Moderator: Kathy Troost

- 8:00 THE CHIWAUKUM STRUCTURAL LOW: CENOZOIC SHORTENING OF THE CENTRAL CASCADE RANGE, WASHINGTON STATE, USA. E.S. Cheney, Department of Earth and Space Sciences, University of Washington, Seattle, WA; Nicholas W. Hayman, University of Texas, Institute for Geophysics, Jackson School of Geosciences, Austin TX.
- 8:40 DIVERSE EOCENE MAGMATISM AND EXTENSION ACROSS THE PACIFIC NORTHWEST: IS THERE A UNIFYING EXPLANATION? Jeffrey H. Tepper and Kenneth P. Clark, Geology Department, University of Puget Sound, Tacoma WA.
- 9:20 LATEST UNDERSTANDING OF THE LATE PLEISTOCENE GLACIATION IN THE CENTRAL PUGET LOWLAND. Kathy Goetz Troost, The Pacific Northwest Center for Geologic Mapping Studies, Dept. of Earth and Space Sciences, University of Washington, Seattle WA.
- 10:00 Break

- 10:40 THE PUGET-LOBE 2-STEP: A CLOSE TANGO BETWEEN RELATIVE SEA LEVEL AND GLACIER ADVANCE AND RETREAT AT THE END OF THE PLEISTOCENE IN NORTHWEST WASHINGTON. Douglas H. Clark, Geology Dept., Western Washington University, Bellingham, WA; Eric J. Steig, Dept. Earth and Space Sciences, University of Washington, Seattle WA.
- 11:20 DEGLACIATION OF THE SOUTHERN SALISH LOWLAND. Ralph A. Haugerud, U.S. Geological Survey c/o Dept. Earth & Space Sciences, University of Washington, Seattle WA.
- 12:00 Lunch
- 1:20 HOLOCENE BURIED AND SUBMERGED FORESTS OF WASHINGTON AND OREGON—TIME CAPSULES OF GEOLOGIC, ENVIRONMENTAL, AND CLIMATE HISTORY. Patrick Pringle, Science Dept., Centralia College, Centralia WA.
- 2:00 HOLOCENE HISTORY OF ALPINE GLACIATION IN THE PACIFIC NORTHWEST. J. L. Riedel, North Cascades National Park, Marblemount WA
- 2:40 Break

Session 6: Large Wildfires in the Pacific Northwest

Room: Johnson 075

Moderator: Jessica Halofsky

- 8:00 LOST GROUND: SOIL C AND N DECREASES ASSOCIATED WITH THE BISCUIT WILDFIRE. Peter Homann, Department of Environmental Sciences, Western Washington University, Bellingham WA; Bernard Bormann, Pacific Northwest Forest Research Station, Corvallis OR; Brett Morrissette, Oregon State University, Forestry Sciences Laboratory, Corvallis OR; Robyn Darbyshire, USFS Gold Beach Ranger District, Brookings OR.
- 8:20 MANAGING SOIL EROSION AFTER LARGE WILDFIRES: SEEDING AND FERTILIZATION EFFECTS ON SOIL COVER AND VEGETATION RECOVERY. David W. Peterson and Erich K. Dodson, Pacific Northwest Research Station, USDA Forest Service, Wenatchee WA.
- 8:40 PLANT COMMUNITY DYNAMICS FOLLOWING WILDFIRE AND RESTORATION TREATMENTS IN THE TIMBERED ROCK FIRE. Lori Kayes, Klaus Puettmann, Department of Forest Ecosystems and Society, Oregon State University, Corvallis OR; Paul Anderson, Pacific Northwest Research Station, USDA Forest Service, Corvallis OR.
- 9:00 STAND DYNAMICS AND FIRE SEVERITY IN MANAGED DRY FORESTS OF THE EASTSIDE CASCADE RANGE, WASHINGTON. Christina Lyons-Tinsley, College of Forest Resources, University of Washington, Seattle WA; David L. Peterson, USDA Forest Service, Pacific Northwest Research Station, Seattle WA.
- 9:20 FIRE SEVERITY AND POST-FIRE VEGETATION RECOVERY IN RIPARIAN AREAS OF TWO OREGON FIRES. Jessica Halofsky and David Hibbs, Department of Forest Ecosystems and Society, Oregon State University, Corvallis OR.
- 9:40 EFFECTS OF A CENTURY OF FIRE SUPPRESSION ON RIPARIAN FORESTS OF SOUTHWESTERN OREGON. Michael Messier and David Hibbs, Oregon State University, Corvallis OR.
- 10:00 Break

- 10:40 TWENTY YEARS OF RECOVERY AFTER FIRE IN THE KLAMATH-SISKIYOU. David Hibbs, Department of Forest Ecosystems and Society, Oregon State University, Corvallis OR; Jeff Shatford, Wood Buffalo National Park of Canada, Fort Smith, Northwest Territories; Maria Lopez, Veteranos del 70, Asuncion, Paraguay.
- 11:00 HABITAT SELECTION OF NORTHERN SPOTTED OWLS FOLLOWING WILDFIRE IN SOUTHWESTERN OREGON. Darren Clark, Robert Anthony, and Steve Andrews, Oregon Cooperative Fish and Wildlife Research Unit, Department of Fisheries and Wildlife, Oregon State University, Corvallis OR.
- 11:20 WATERSHED-SCALE MAPPING OF FIRE SEVERITY IN A MIXED-SEVERITY REGIME. Karen Kopper, North Cascades National Park, Marblemount, WA; Donald McKenzie, Pacific Wildland Fire Sciences Laboratory, Seattle WA.
- 11:40 THE STRUCTURE OF NATIVE LANDSCAPE RESILIENCE AND ITS SPATIAL CONTROLS. Paul F. Hessburg and Nicholas A. Povak, USDA Forest Service, Pacific Northwest Research Station, Wenatchee WA.
- 12:00 Lunch

Session 7: Lichenology / Bryology

Room: Johnson 111

Moderator: Erin Martin

- 8:40 OBSERVATIONS ON THE DISJUNCT POPULATION OF THE RARE AND ENDANGERED BOREAL FELT LICHEN *Erioderma pedicellatum* IN SOUTH CENTRAL ALASKA. Peter Nelson, Department of Botany and Plant Pathology, Oregon State University, Corvallis OR and Central Alaska Network, National Park Service, Denali Park AK; Christoph Scheidegger, Swiss Federal Institute for Forest, Snow and Landscape Research, Birmensdorf, Switzerland; James Walton, Central Alaska Network, National Park Service, Denali Park AK.
- 9:00 MACROLICHEN DIVERSITY IN NOATAK NATIONAL PRESERVE, ALASKA. Bruce McCune, Emily Holt, Dept. Botany and Plant Pathology, Oregon State University, Corvallis OR; Peter Neitlich, National Park Service, Winthrop WA; Teuvo Ahti, Botanical Museum, Helsinki University, Finland; and Roger Rosentreter, Bureau of Land Management, Boise ID.
- 9:20 WHAT CAN SEATTLE'S CEDAR RIVER WATERSHED TELL US ABOUT LICHEN DIVERSITY? Katherine Glew, Lichen Collection, Herbarium, Seattle WA.
- 9:40 THE STATUS OF LICHEN CONSERVATION IN CALIFORNIA. Erin P. Martin, Pacific University, Department of Biology, Forest Grove OR, and California Lichen Society, San Francisco CA; Eric Peterson, Tom Carlberg, California Lichen Society, San Francisco CA.
- 10:00 Break

Session 8: Ecology and Resource Management

Room: Johnson Hall 175

Moderator: Joseph Arnett

- 8:20 USING THE CAMPUS AS A LIVING LABORATORY FOR SUSTAINABILITY STUDIES. Jill Whitman, Rose McKenney and Claire Todd, Department of Geosciences, Pacific Lutheran University, Tacoma WA.
- 8:40 SPATIAL AND TEMPORAL PATTERNS OF SEDIMENT RESUSPENSION IN URBAN STORMWATER DETENTION PONDS. Katherine K. Norton and J. Alan Yeakley, Environmental Science and Management, Portland State University, Portland OR.
- 9:00 WHERE IS THE RAIN-ON-SNOW ZONE IN THE WEST-CENTRAL WASHINGTON CASCADES? MONTE CARLO SIMULATION OF LARGE STORMS IN THE PACIFIC NORTHWEST. Matthew J. Brunengo, Geology Department, Portland State University, Portland OR.
- 9:20 USING LIDAR FOR MULTI-SCALED ASSESSMENTS OF FOREST STRUCTURE. Van R. Kane, James A. Lutz, Jonathan D. Bakker, Jerry Franklin, College of Forest Resources, University of Washington, Seattle WA; Robert McGaughey, Pacific Northwest Research Station, USDA Forest Service, University of Washington, Seattle WA, and Rolf Gersonde, Watershed Services Division Seattle Public Utilities, North Bend WA.
- 9:40 BACK TO THE FUTURE: BIOLOGICAL, DISTURBANCE, LANDSCAPE, GEOGRAPHIC, ARCHAEOLOGICAL, AND HISTORIC LEGACIES FROM RAILROAD LOGGING—50 TO 130 YEARS OF POST DISTURBANCE RECOVERY ACROSS NORTH AMERICA. Erik Piikkila, Railroad Logging Legacies Project, Victoria BC.
- 10:00 Break
- 10:40 A COMPARISON OF LANDSCAPE-LEVEL PATTERNS IN THE DEMOGRAPHY AND DISTRIBUTION OF TREE SPECIES IN CENTRAL ALASKA – EVIDENCE FOR WIDESPREAD MORTALITY AND RECOVERY OF TAMARACK (*Larix laricina*) FROM A RECENT LARCH SAWFLY OUTBREAK. Carl Roland, National Park Service, Fairbanks AK.
- 11:00 A POTENTIAL HABITAT MODEL FOR SALAL (*Gaultheria shallon*) FOR THE OLYMPIC NATIONAL FOREST, WASHINGTON. Robin Leshner, Jan Henderson and Chris Ringo, USDA Forest Service, Mt. Baker-Snoqualmie National Forest, Everett WA.
- 11:20 STATUS AND DISTRIBUTION OF TREE VOLES IN THE COLUMBIA RIVER GORGE AND NORTHWEST OREGON. James Swingle, Department of Fisheries and Wildlife, Oregon State University, Corvallis OR; Eric Forsman, USDA Forest Service, Pacific Northwest Research Station, Corvallis OR; Michael McDonald, Nicholas Hatch, and Scott Graham, Department of Fisheries and Wildlife, Oregon State University, Corvallis OR.
- 11:40 IMPACTS OF MANAGING PUBLIC LANDS FOR LIVESTOCK PRODUCTION. Michael Marsh, Washington Native Plant Society, Seattle WA.
- 12:00 Lunch

Session 9: Vegetation Classification and Workshop

Room: Johnson Hall 022

Moderator: Rex Crawford

- 8:00 BENTON COUNTY SHRUB-STEPPE COMMUNITIES—ECOSYSTEMS SHAPED BY HUMAN AND NATURAL FORCES. Michael Marsh, Washington Native Plant Society, Seattle WA.
- 8:20 CLASSIFICATION OF CRATERS OF THE MOON PLANT COMMUNITIES: ASSESSING BOUNDARIES BETWEEN THE GOOD, BAD, AND UGLY. Steven K. Rust, Northwest Institute on Plant Community Conservation, Boise ID.
- 8:40 PLANT COMMUNITIES OF LAKE ROOSEVELT NATIONAL RECREATION AREA, WASHINGTON. Steven K. Rust, Northwest Institute on Plant Community Conservation, Boise ID.
- 9:00 STATUS OF THE INTERNATIONAL VEGETATION CLASSIFICATION AND ITS APPLICATION TO THE WASHINGTON NATURAL HERITAGE STATEWIDE CLASSIFICATION. Rex C. Crawford and F. Joseph Rocchio, Natural Heritage Program, Washington Dept. Natural Resources, Olympia WA.
- 10:00 Break

Session 10: Lichenology / Bryology Forum and Discussion

Room: Johnson Hall 111

Moderator: John Villella

- 10:40 Contracting for Lichen Survey Work
- 12:00 Lunch

Session 11: Botany

Room: Johnson Hall 022

Moderator: Tracy Fuentes

- 10:40 TAXONOMIC IMPLICATIONS OF DNA PLOIDY DISTRIBUTION PATTERNS IN THE NORTH AMERICAN *Crepis agamic* COMPLEX AS INFERRED FROM FLOW CYTOMETRY CONDUCTED ON DRIED LEAF MATERIAL. Chris Sears and Jeannette Whitton, Department of Botany, University of British Columbia, Vancouver, BC.
- 11:00 USE OF CONSERVATION DETECTION DOGS FOR SURVEYS OF A THREATENED PRAIRIE PLANT, KINCAID'S LUPINE (*Lupinus sulphureus* ssp. *kincaidii*). David G. Vesely, Oregon Wildlife Institute, Corvallis OR; Deborah A. Smith and Alice Whitelaw, Working Dogs for Conservation Foundation, Three Forks MT; Greg Fitzpatrick, The Nature Conservancy, Corvallis OR.
- 11:20 RARE *Carex constanceana* REDISCOVERED AND REASSESSED. Barbara L. Wilson, Richard E. Brainerd, Nick Otting, *Carex* Working Group, Eugene OR; Andrew Hipp, Morton Arboretum, Lisle, IL; Peter Zika, WTU Herbarium, University of Washington, Seattle WA.
- 11:40 HIMALAYAN BLACKBERRY INVASION UNDER SEASONALLY FLUCTUATING WATER AVAILABILITY CONDITIONS. Josh Caplan and Alan Yeakley, Environmental Sciences, Portland State University, Portland OR.
- 12:00 Lunch

Session 12: Elwha River Restoration Project Symposium

Room: Johnson Hall 075

Moderator: Jeffrey Duda

- 1:20 FROM THE HEADWATERS TO THE SEA: A RIVERSCAPE PERSPECTIVE ON DISTRIBUTION AND ABUNDANCE PATTERNS OF FISH COMMUNITIES IN THE ELWHA RIVER PRIOR TO DAM REMOVAL. Jeffrey Duda, U.S. Geological Survey, Western Fisheries Research Center, Seattle WA; Sam Brenkman, National Park Service, Olympic National Park, Port Angeles WA; Roger Peters, U.S. Fish and Wildlife Service, Western Washington Fisheries Division, Lacey WA; Christian Torgersen and Ethan Welty, U.S. Geological Survey, Cascadia Field Station, Seattle WA; George Pess, NOAA Northwest Fisheries Science Center, Seattle WA; and Mike McHenry, Lower Elwha Klallam Tribe, Port Angeles WA.
- 1:40 EFFECTS OF SALMON CARCASSES ON RIVERINE FOOD WEBS: AN EXPERIMENTAL FIELD STUDY ON THE ELWHA RIVER. Sarah Morley, Holly Coe, Northwest Fisheries Science Center, NOAA, Seattle WA; Jeffrey Duda, U.S. Geological Survey, Western Fisheries Research Center, Seattle WA; Michael McHenry, Lower Elwha Klallam Tribe, Port Angeles WA.
- 2:00 RESPONSE OF RIPARIAN WILDLIFE COMMUNITIES TO RESTORATION OF ANADROMOUS FISH IN THE ELWHA RIVER ECOSYSTEM. Kurt Jenkins, USGS Forest and Rangeland Ecosystem Science Center, Olympic Field Station, Port Angeles WA; Nathan Chelgren, Michael Adams, Steve Perakis, USGS Forest and Rangeland Ecosystem Science Center, Corvallis OR; Kim Sager-Fradkin, Lower Elwha Klallam Tribe, Port Angeles WA; Patricia Happe, Olympic National Park, Port Angeles WA.
- 2:20 SEDIMENT TRANSPORT AND FLUVIAL GEOMORPHOLOGY ON THE ELWHA RIVER. Christopher A. Curran, U.S. Geological Survey, Tacoma WA; Amy E. Draut, U.S. Geological Survey, Santa Cruz CA; Christopher S. Magirl, U.S. Geological Survey, Tacoma WA.
- 2:40 Break
- 3:20 PREDICTING THE RIPARIAN VEGETATION RESPONSE TO DAM REMOVAL ON THE ELWHA RIVER. James Michel and James Helfield, Huxley College of the Environment, Western Washington University, Bellingham WA.
- 3:40 USING MODERN PROCESSES TO UNDERSTAND POSTGLACIAL DELTA EVOLUTION: ELWHA RIVER DELTA. Kristen M. Lee, Andrea S. Ogston, Charles A. Nittrouer, Department of Oceanography, University of Washington, Seattle WA.
- 4:00 ALONGSHORE MOVEMENT OF COARSE BEACH MATERIAL ADJACENT TO THE ELWHA RIVER MOUTH, STRAIT OF JUAN DE FUCA, WASHINGTON. Ian Miller, Department of Ocean Sciences, UC Santa Cruz, Santa Cruz CA; Jon Warrick, U.S. Geological Survey, Coastal and Marine Geology, Santa Cruz CA; Guy Gelfenbaum, U.S. Geological Survey, Coastal and Marine Geology, Menlo Park CA; Gary Griggs, Department of Earth and Planetary Science, UC Santa Cruz, Santa Cruz CA; Chris Morgan, Olympic Park Institute, Port Angeles WA.
- 4:20 RESTORATION OF SEDIMENT PROCESSES RESULTING FROM REMOVAL OF ELWHA RIVER DAMS: DEVELOPING BASELINE DATA AND REFERENCE AREAS TO MONITOR FISH RESPONSES IN NEAR COASTAL HABITATS. Kurt Fresh, Josh Chamberlin, Anna Kagley, NOAA Fisheries, NWFSC, Seattle WA; Larry Ward, Lower Elwha Fisheries Office, Port Angeles WA; Nichole Sather, PNNL, Department of Energy, Sequim WA; Anne Shaffer, WDFW, Habitat Program, Port Angeles WA.

- 4:40 SCUBA SURVEYS TO CHARACTERIZE NEARSHORE BIOLOGICAL COMMUNITIES PRIOR TO REMOVAL OF THE ELWHA RIVER DAMS. Steve Rubin, U.S. Geological Survey, Western Fisheries Research Center, Seattle WA; Ian Miller, Ocean Sciences Department, University of California Santa Cruz, Santa Cruz CA; Nancy Elder, U.S. Geological Survey, Western Fisheries Research Center, Nordland WA; Reg Reisenbichler, Jeff Duda, U.S. Geological Survey, Western Fisheries Research Center, Seattle WA.

Session 13: Pacific Northwest Fungi in a Changing Environment

Room: Johnson Hall 111

Moderator: Dean Glawe

- 1:20 RATES OF DISCOVERY OF NEW HOST-FUNGUS RECORDS IN THE PACIFIC NORTHWEST: EXAMPLES FROM THE PALOUSE REGION OF NORTHERN IDAHO AND EASTERN WASHINGTON. Frank M. Dugan, USDA-ARS Western Regional Plant Introduction Station, Washington State University, Pullman WA.
- 1:40 DIVERSITY OF POWDERY MILDEWS IN THE PACIFIC NORTHWEST AND IMPLICATIONS FOR ESTIMATING SPECIES DIVERSITY OF OTHER FUNGAL GROUPS. D. A. Glawe, Department of Plant Pathology, Washington State University and College of Forest Resources, University of Washington, Seattle WA.
- 2:00 PALE SPORED MEMBERS OF THE FAMILY AGARICACEAE (=LEPIOTACEAE) IN WESTERN WASHINGTON. Joshua M. Birkebak, University of Washington, Department of Biology, Seattle WA.
- 2:20 THE RELATIONSHIP BETWEEN MACRO-FUNGUS SPECIES RICHNESS AND WEATHER DATA IN A SECOND-GROWTH URBAN FOREST IN THE PACIFIC NORTHWEST. Luke Bayler, Department of Biology, Seattle WA.
- 2:40 Break
- 3:20 WINTER CLIMATE CHANGE AND INTERACTION WITH DISEASES OF WHEAT IN THE PACIFIC NORTHWEST U.S. Timothy D. Murray, Department of Plant Pathology, Washington State University, Pullman WA.
- 3:40 SOME OBSERVATIONS ON PACIFIC NORTHWEST MUSHROOM GEOGRAPHY. Joe Ammirati, Department of Biology, University of Washington, Seattle WA.

Session 14: Adaptation of Forests to Climate Change

Room: Johnson Hall 175

Moderator: Daniel Chmura

- 1:20 USING THE FOREST SYSTEM TO MITIGATE GREENHOUSE GAS EMISSIONS. Mark E. Harmon, Dept. of Forest Ecosystems and Society, Oregon State University, Corvallis OR.
- 2:00 FORESTS OF THE INLAND WEST: LIFE CYCLE ANALYSIS AND FULL CARBON ACCOUNTING. Bruce Lippke, Director of CORRIM and College of Forest Resources, University of Washington, Seattle WA; Elaine Oneil, College of Forest Resources, University of Washington, Seattle WA; Leonard Johnson, College of Forest Resources, University of Idaho, Moscow ID.
- 2:20 CONTRIBUTIONS OF ECTOMYCORRHIZAL FUNGAL MATS TO FOREST SOIL RESPIRATION. Claire L. Phillips, Department of Forest Ecosystems and Society, Oregon State University, Corvallis OR; Laurel Kluber, Department of Crops and Soil Science, Oregon

State University, Corvallis OR; Julia Pedersen, Barbara J. Bond, Dept. of Forest Ecosystems and Society, Oregon State University, Corvallis OR.

2:40 Break

3:20 GENETIC MALADAPTATION OF COASTAL DOUGLAS-FIR SEEDLINGS TO FUTURE CLIMATES. Glenn T. Howe, Department of Forest Ecosystems and Society, Oregon State University, Corvallis OR; Brad St.Clair, Pacific Northwest Research Station, USDA Forest Service, Corvallis OR.

4:00 EFFECT OF WINTER ENVIRONMENT ON SPRING BUDBURST IN DOUGLAS-FIR. Constance A. Harrington, Peter J. Gould, J. Bradley St. Clair, USDA Forest Service, Pacific Northwest Research Station, Olympia WA.

4:20 CLIMATE CHANGE AS A DRIVER OF MOUNTAIN PINE BEETLE OUTBREAKS IN EASTERN WASHINGTON. Elaine Oneil, College of Forest Resources, University of Washington, Seattle WA; Don McKenzie, Pacific Wildland Fire Science Lab, Pacific Northwest Research Station, USDA Forest Service, Seattle WA.

4:40 EFFECT OF DISTURBANCE TYPE ON LIVE AND DEAD BIOMASS STORES IN COASTAL FOREST ECOSYSTEMS OF ALASKA. Mikhail A. Yatskov; Olga N. Krankina; Mark E. Harmon, Oregon State University, Corvallis OR; Tara M. Barrett, Kevin R. Dobelbower, USDA Forest Service, Pacific Northwest Research Station, Anchorage AK; Andrew N. Gray, USDA Forest Service, Pacific Northwest Research Station, Corvallis Forestry Sciences Lab, Corvallis OR.

Session 15: Fire Ecology
Room: Johnson Hall 022
Moderator: Steven Rust

1:20 THE EFFECT OF MOISTURE CONTENT ON FIRE INITIATION FROM SMOLDERING IGNITION SOURCES. G. Matt Davies, College of Forest Resources, University of Washington, Seattle WA; Colin Legg, Centre for the Study of Environmental Change and Sustainability, The University of Edinburgh, Scotland; Rory Hadden and Guillermo Rein, BRE Centre for Fire Safety Engineering, The University of Edinburgh, Scotland

1:40 SNAG RETENTION, WILDLIFE USAGE, AND SURFACE FUEL DEPOSITION FOLLOWING LARGE, STAND-REPLACING WILDFIRES IN DRY CONIFEROUS FORESTS. Erich K. Dodson and David W. Peterson, Pacific Northwest Research Station, USDA Forest Service, Wenatchee WA.

2:00 PYRODIVERSITY ACROSS THE METOLIUS FIRESHED: A CARBON PERSPECTIVE. Garrett W. Meigs and Beverly E. Law, Department of Forest Ecosystems and Society, Oregon State University, Corvallis OR.

2:20 STAND STRUCTURE AND DISTURBANCE EFFECTS IN SOUTHWESTERN OREGON *Quercus garryana*-DOMINATED WOODLANDS. Laurie Gilligan and Patricia S. Muir, Department of Botany and Plant Pathology, Oregon State University, Corvallis OR.

2:40 Break

Session 16: Seismicity and Tectonics

Room: Johnson Hall 102

Moderator: Thomas Pratt

- 3:20 MONITORING THE ACTIVE CASCADE VOLCANOES. Stephen D. Malone, Department of Earth and Space Sciences, University of Washington, Seattle WA.
- 3:40 EPISODIC TREMOR AND SLIP ON THE CASCADIA MEGATHRUST—TRYING TO UNVEIL THE INNER WORKINGS. John E. Vidale, Pacific Northwest Seismic Network, University of Washington, Seattle WA.
- 4:00 COMPARISON OF GEODETIC AND PALEOSEISMIC RATES OF DEFORMATION IN THE PUGET SOUND-GEORGIA BASIN, PACIFIC NORTHWEST. Brian L. Sherrod, U.S. Geological Survey at Dept. of Earth and Space Sciences, University of Washington, Seattle WA; Stephane Mazzotti, Geological Survey of Canada, Natural Resources Canada, Sidney, BC, Canada; Ralph Haugerud, U.S. Geological Survey at Dept. of Earth and Space Sciences, University of Washington, Seattle WA.
- 4:20 IS THE SEATTLE FAULT BENEATH DOWNTOWN SEATTLE? Thomas Pratt, U.S. Geological Survey, School of Oceanography, University of Washington, Seattle WA; Kathy Troost, GeomapNW, Department of Earth and Space Sciences, University of Washington, Seattle WA.
- 4:40 ATLAS OF ACTIVE TECTONIC DEFORMATION IN THE PUGET SOUND REGION. Elizabeth Barnett, U.S. Geological Survey, Dept of Earth and Space Sciences, University of Washington, Seattle WA.

POSTER SESSION

Thursday March 26

Session 17: Poster Session

Room: Mary Gates Hall Commons

- 1:00-3:20 Poster Session Setup
- 3:20-5:00 Attended Poster Session
Authors available for discussion and questions.

Friday March 27

Session 17: Poster Session

Room: Mary Gates Hall Commons

- 8:00 – 3:20 Poster Session Display
- 3:20 – 400 Poster Session take down

Poster Session Presentations

VARIABILITY IN OVERSTORY DENSITY REDUCTIONS IS REFLECTED IN UNDERSTORY VEGETATION RESPONSE IN CONIFEROUS FORESTS OF WESTERN OREGON. Adrian Ares, Andrew R. Neill, and Klaus J. Puettmann, Oregon State University, Department of Forest Ecosystems and Society, Corvallis OR

OVERSTORY DENSITY EFFECTS ON GROWTH OF THREE CONIFEROUS SPECIES OF REGENERATION. Leslie C. Brodie, USDA Forest Service Pacific Northwest Research Station, Olympia WA

SEISMIC SITE CLASS AND THREE-DIMENSIONAL GEOLOGIC MAPPING FOR SPOKANE VALLEY AREA IN WASHINGTON. Recep Cakir, Robert E. Derkey and Timothy J. Walsh, Division of Geology and Earth Resources, Washington State Department of Natural Resources, Olympia WA

USE OF EARTHQUAKE CATALOG AND WAVEFORM DATA FOR TECTONIC MAPPING IN WA. Recep Cakir, Joe Dragovich, Timothy J. Walsh, Division of Geology and Earth Resources, Washington State Department of Natural Resources, Olympia WA; Renate Hartog, The Pacific Northwest Seismic Network, University of Washington, Seattle WA; Shelton S. Alexander, Department of Geosciences, The Pennsylvania State University, University Park PA; Megan L. Anderson, Department of Geology, Colorado College, Colorado Springs CO

REMOTELY OPERATED VEHICLE (ROV) VIDEO INVESTIGATION OF TWO LARGE SEAFLOOR MOUNDS IN SOUTHERN HOOD CANAL, WASHINGTON. Recep Cakir, Robert L. Logan, Chris Johnson, Timothy J. Walsh, Division of Geology and Earth Resources, Washington State Department of Natural Resources, Olympia WA; Robert Pacunski, Lisa Hillier, and James Beam, Washington State Department of Fish and Wildlife, Olympia WA; Todd Palzer, Division of Aquatic Resources, Washington State Department of Natural Resources, Olympia WA

TWO-DIMENSIONAL MULTI-CHANNEL ANALYSIS OF SURFACE WAVES (MASW) IMAGING AT TWO PALEOSEISMIC TRENCH SITES IN WASHINGTON. Recep Cakir, Timothy J Walsh, Trevor A Contreras, Kelsay Stanton, Isabelle Sarikhan, Division of Geology and Earth Resources, Washington State Department of Natural Resources, Olympia WA

CHEMICAL AND PHYSICAL CHARACTERIZATION OF ELWHA RIVER SEDIMENTS RELATING TO PHOSPHORUS RELEASE. Emily Cavaliere, Peter Homann, Western Washington University, Department of Environmental Sciences, Bellingham WA

PREDICTION OF SEDIMENT YIELD FROM SWIFT CREEK LANDSLIDE USING THE DISTRIBUTED-HYDROLOGY-VEGETATION-MODEL. Curtis Clement and Robert Mitchell, Western Washington University, Geology Department, Bellingham WA

STATUS AND POPULATION STRUCTURE OF FRESHWATER MUSSELS IN THE ELWHA RIVER 100 YEARS AFTER THE DAMS. David L. Cowles, Layla Cole, Department of Biology, Walla Walla University, College Place WA; Patrick Crain, Olympic National Park, Port Angeles WA

ACTIVE FAULTING ALONG A SEGMENT OF THE SADDLE MOUNTAIN FAULT ZONE, SOUTHEASTERN OLYMPIC MOUNTAINS, WA: A PALEOSEISMIC TRENCHING STUDY. Jessica L Czajkowski¹, Elizabeth A Barnett², Timothy J Walsh¹, Trevor A Contreras¹, Kelsay Davis-Stanton¹, Brian Sherrod², Harvey M Kelsey³, Elizabeth R Schermer⁴, Robert J Carson⁵, (1) Division of Geology and Earth Resources, Washington State Department of Natural Resources, Olympia WA; (2) U.S. Geological Survey, Department of Earth and Space Sciences, University of Washington, Seattle WA; (3) Department of Geology, Humboldt State University, Arcata CA; (4) Geology Department, Western Washington University, Bellingham WA; (5) Department of Geology, Whitman College, Walla Walla WA

CHARACTERIZATION OF BIOLOGICAL DIVERSITY WITHIN OLD-GROWTH REFUGIA AND MANAGED FORESTS IN THE WILLAPA HILLS, WASHINGTON. Liane Davis, David Rolph, Yoav Bar-Ness, and Heidi Huber, The Nature Conservancy, Washington Field Office, Seattle WA; David Shaw, Department of Forest Engineering, Resources and Management, Oregon State University, Corvallis OR

SEASONAL PATTERNS IN OREGON WHITE OAK GROWTH. Warren D. Devine, Constance A. Harrington, USDA Forest Service Pacific Northwest Research Station, Olympia WA

GEOLOGIC MAP OF THE NORTH BEND 7.5-MINUTE QUADRANGLE, KING COUNTY, WASHINGTON—IMPLICATIONS FOR MAJOR CENEZOIC FAULTS, FOLDS AND BASINS IN THE AREA. Joe D. Dragovich¹, Timothy J. Walsh¹, Megan L. Anderson², Renate Hartog³, S. Andrew DuFrane⁴, Jeff Vervoot⁴, Stephanie A. Williams¹, Recep Cakir¹, Kelsay M. Davis¹, Fritz E. Wolff¹, David K. Norman¹, and Jessica L. Czajkowski¹.¹ Washington Division of Geology and Earth Resources, Olympia WA; ² Colorado College Department of Geology, Colorado Springs CO; ³ Pacific Northwest Seismic Network, University of Washington, Seattle WA; ⁴ Washington State University School of Earth and Environmental Sciences, Pullman WA

HABITAT UTILIZATION AND DISPERSAL PATTERNS OF JUVENILE CHINOOK SALMON INFERRED FROM OTOLITH ANALYSIS. Jeffrey J. Duda, Karl Stenberg, Kim Larsen, U.S. Geological Survey, Western Fisheries Research Center, Seattle WA; Matt Beirne, Mike McHenry, Lower Elwha Klallam Tribe, Port Angeles; Kurt Fresh, Anna Kagle, and Josh Chamberlin, NOAA Fisheries, Northwest Fisheries Science Center, Seattle WA; and Anne Shaffer, Washington Department of Fisheries and Wildlife, Port Angeles WA

GEOCHEMICALLY ANOMALOUS IGNEOUS ROCKS OF THE OLYMPIC PENINSULA: IMPLICATIONS FOR EOCENE TECTONICS. Sarah E. Glancy, Jeffrey H. Tepper, University of Puget Sound, Department of Geology, Tacoma WA

SIMULATING EFFECTS OF CLIMATE CHANGE ON FORESTS, FIRE, AND HYDROLOGY IN AN EASTERN CASCADES WATERSHED. Richard Gwozdz, College of Forest Resources, University of Washington, Seattle WA; Don McKenzie, USDA Forest Service, Pacific Wildland Fire Sciences Lab, Seattle WA

MARDON SKIPPER (*Polites mardon*) OVIPOSITION SITE SELECTION IN PUGET SOUND PRAIRIES. Erica Henry, Cheryl Schultz, School of Earth and Environmental Sciences, Washington State University Vancouver, Vancouver WA

SOIL CRUST LICHEN HUNTING AND IDENTIFICATION ON THE WILD HORSE WIND FARM AND WHISKEY DICK WILDLIFE AREA OF KITTITAS COUNTY, WASHINGTON. Dawn-Marie Jensen, Central Washington University, Resource Management Program, Ellensburg WA

PARKING LOT TO PRAIRIE: A VEGETATION ASSESSMENT OF ECOLOGICAL RESTORATION ON THE UNION BAY NATURAL AREA, SEATTLE. Lacey Jeroue, Lexine Long, College of Forest Resources, University of Washington, Seattle WA

TREE GROWTH RESPONSES TO SNOWPACK ACROSS AN ELEVATIONAL GRADIENT AT MOUNT RAINIER NATIONAL PARK, WASHINGTON, USA. Ailene Kane, Janneke Hille Ris Lambers, Jonathan Deschamps, Gerald Lisi, Department of Biology, University of Washington, Seattle WA

MICRO-PLASTICS MONITORING IN PUGET SOUND AND NORTHWEST STRAITS. Jen Kingfisher, Chrissy McLean, Anne Murphy, Jean Walat, Port Townsend Marine Science Center, Port Townsend WA; Cinamon Moffett, University of Maine, School of Marine Science, Orono ME

POPULATION GENOMICS IN SPECIES CONSERVATION: TOOLS FOR THE STUDY OF LOCAL ADAPTATION AND FISHERIES MANAGEMENT IN KOKANEE (*Oncorhynchus nerka*). Stephanie L. Kirk, Michael A. Russello, Unit of Biology and Physical Geography and Centre for Species at Risk and Habitat Studies, University of British Columbia Okanagan, Kelowna, BC

PHYTOREMEDIATION OF CHLORPYRIFOS. Keum Young Lee, Sharon L. Doty, College of Forest Resources, University of Washington, Seattle WA; Stuart E. Strand, College of Forest Resources, Department of Civil and Environmental Engineering, University of Washington, Seattle WA

DOES PLOT DESIGN MATTER WHEN MODELING TREE SPECIES DISTRIBUTIONS? Heather Lintz, Department of Botany and Plant Pathology, Oregon State University, Corvallis OR; Andrew N. Gray, USDA Forest Service Pacific Northwest Research Station, Corvallis OR

MIMA MOUNDS FORMATION AND THEIR IMPLICATIONS FOR CLIMATE CHANGE. Robert L. Logan and Timothy J. Walsh, Washington Division of Geology and Earth Resources, Washington State Department of Natural Resources, Olympia WA

NO, WE SHOULD USE THE *OTHER* HAMMER: A TOOLBOX-BASED APPROACH TO NEGOTIATING PHILOSOPHICAL DIFFERENCES WITHIN CROSS-DISCIPLINARY RESEARCH GROUPS. Chris Looney, Sanford D. Eigenbrode, Department of Plant, Soil and Entomological Sciences, University of Idaho, Moscow ID; Brian Crist, Michael O'Rourke, Ian O'Loughlin, Department of Philosophy, University of Idaho, Moscow ID; Stephen Crowley, Department of Philosophy, Boise State University, Boise ID; Shannon Donovan, J.D. Wulforst, Department of Agricultural Economics and Rural Sociology, University of Idaho, Moscow ID

FEEDER BLUFF MAPPING IN GREATER PUGET SOUND—A TOOL FOR PROCESSED-BASED NEARSHORE RESTORATION AND CONSERVATION. Andrea MacLennan, Jim Johannessen, and Stephanie Williams, Coastal Geologic Services, Inc. Bellingham WA

POLLEN EFFECTS ON PLANT REPRODUCTION IN THE RARE PLANT, *Astragalus peckii*. Elizabeth Martin, Oregon State University, Department of Botany and Plant Pathology, Corvallis OR

SEDIMENT AND WOODY DEBRIS DYNAMICS OF HEADWATER STREAMS IN MANAGED FORESTS OF WESTERN WASHINGTON. Melissa Maxa; Robert Edmonds; Dan Vogt, College of Forest Resources, University of Washington, Seattle, WA; Richard Bigley, Washington State Department of Natural Resources, Olympia WA; Douglas Martin, Seattle WA

THE WEST COAST GEOGRAPHY OF RAILROAD LOGGING: HISTORIC SITES AND POSSIBLE RESEARCH SITES. Erik Piikkila, Railroad Logging Legacies Project, Victoria BC V9B 3A3

RECONNAISSANCE LANDSLIDE INVENTORY AND MAPPING OF RELATIVE LANDSLIDE HAZARD ALONG THE MARINE SHORE OF THURSTON COUNTY, WASHINGTON. Michael Polenz; Gabriel Legorreta-Paulin; Isabelle Sarikhan; Timothy Walsh, Washington Department of Natural Resources, Olympia WA; Aaron Young, Robinson, Noble & Saltbush, Inc., Tacoma WA

A MULTI-SCALE APPROACH FOR QUANTIFYING CARBON DYNAMICS IN WASHINGTON FORESTS. Crystal Raymond, College of Forest Resources, University of Washington, Seattle WA; Donald McKenzie, USDA Forest Service Pacific Northwest Research Station, Seattle WA

WASHINGTON GEOLOGIC SURVEY'S LANDSLIDE RESPONSE TO THE JANUARY 7-8TH, 2009 STORM. Isabelle Y. Sarikhan; Trevor A. Contreras; Kelsay M. Davis Stanton; Michael Polenz; Timothy J. Walsh; Recep Cakir; Washington State Department of Natural Resources, Division of Geology and Earth Resources, Olympia WA

FISH USE OF THE ELWHA ESTUARY. J. Anne Shaffer, Washington Department of Fish and Wildlife, Port Angeles WA; Matt Beirne, Lower Elwha Klallam Tribe, Port Angeles WA; Rebecca Paradis, Daniel

Brooks, and Dwight Berry, Western Washington University Huxley Program for the Peninsula, Port Angeles WA; Patrick Crain, Olympic National Park, Port Angeles WA, and Cathy Lear, Clallam County, Port Angeles WA

THE ELWHA NEARSHORE: LINKING MANAGEMENT, EDUCATION, AND RESEARCH TO ACHIEVE ECOSYSTEM RESTORATION. PRIORITY RECOMMENDATIONS OF THE ELWHA NEARSHORE CONSORTIUM 2009. Anne Shaffer, Washington Dept of Fish and Wildlife, Port Angeles WA; Cathy Lear, Clallam County, Port Angeles WA; Matt Beirne, Lower Elwha Klallam Tribe, Port Angeles WA; Patrick Crain, Olympic National Park, Port Angeles WA; Shea McDonald and Willie Spring, Western Washington University Huxley Program for the Peninsula, Port Angeles, WA

THE CRESCENT FORMATION ALONG LAKE CUSHMAN'S NORTHERN SHORE, OLYMPIC PENINSULA, WASHINGTON: A STRATIGRAPHIC, CHEMICAL AND STRUCTURAL STUDY. Elizabeth A Smith, Kenneth P Clark, Tacoma, WA

EARTHQUAKE-INDUCED LANDSLIDE AND LIQUEFACTION SUSCEPTIBILITY IN TSUNAMI EVACUATION ROUTES, COASTAL WASHINGTON. Kelsay Davis Stanton, Timothy J. Walsh, Recep Cakir, Trevor A. Contreras, Division of Geology and Earth Resources, Department of Natural Resources, Olympia WA

CONSERVING A WESTERN POND TURTLE (*Actinemys marmorata*) POPULATION IN WEST EUGENE WETLANDS, LANE COUNTY, OREGON. David G. Vesely, Oregon Wildlife Institute, Corvallis OR; Sally Villegas-Moore, USDI Bureau of Land Management, Eugene District, Eugene OR

GEOCHEMICAL, PETROGRAPHIC, AND STRATIGRAPHIC ANALYSIS OF THE CRESCENT FORMATION, MOUNT TEBO, SOUTHERN OLYMPIC MOUNTAINS, WASHINGTON. E.M. Waldron and K. Clark, Geology, University of Puget Sound, Tacoma WA

TSUNAMI HAZARD MAP OF TACOMA, WASHINGTON: MODEL RESULTS FOR SEATTLE FAULT AND TACOMA FAULT EARTHQUAKES. Timothy J. Walsh, Division of Geology and Earth Resources, Department of Natural Resources, Olympia, WA; Diego Arcas, Angie J. Venturato, Vasily V. Titov, Harold O. Mofjeld, Chris C. Chamberlin, and Frank I. Gonzalez, NOAA Center for Tsunami Research, NOAA/PMEL - UW/JISAO, Seattle WA 98115

FIELD GUIDE TO THE SEDGES OF THE PACIFIC NORTHWEST. Barbara L. Wilson, Richard E. Brainerd, Nick Otting, Carex Working Group, Eugene OR; Bruce Newhouse, Salix Associates, Eugene OR

FIELD TRIPS

Saturday March 28

- 7:30 am Northwest Lichenologists - Valley of the South Fork Stillaguamish River.
Leader: Richard Droker
Departure Location: gravel lot across Boat Street to north from Aqua Verde café (southwestern part of UW campus)
Contact: drokoo@mac.com

Probably the most pristine area within one hour's driving time from the University of Washington. The hike will explore the lower elevations of the valley. Abundant *Usnea longissima* is expected and indicative of a healthy habitat. Several lichen stops will be made along the river and on side roads. The lower elevation forest is dominated by old-growth forest, consisting of western hemlock, western redcedar, and occasional Douglas-fir. Red alder, big leaf maple and black cottonwood are abundant along the river. Upper elevation forests along Perry Creek will include grand fir. Access to higher elevations will be limited by persistent winter snow pack. If the group is so inclined we should be able to walk for some distance on trails.

- 10:00 am Burke Museum - Behind the Scenes
Meet at Burke Museum of Natural History and Culture
Leaders: Burke Museum Curators and Collections Managers
Contact: baxgrc@u.washington.edu

The Burke Museum of Natural History is located on the University of Washington campus. Take a tour of the paleontology and biology collections with curators and collections managers. We will open up the cabinet doors and show you our collection of fossils, birds and mammals and describe how the collections are made and conserved, and how they are used. The Paleontology & Geology Division holds some of the oldest museum acquisitions and now includes ~4 million specimens, from petrified wood slabs and dinosaur bones to microfossils. Tour at 10 am - 12.30 pm, and then you are free to see the museum's exhibits that include a new one on *Coffee*.

- 10:00 am Washington Park Arboretum / UW Botanic Gardens
Meet at Graham Visitor Center - Washington Park Arboretum
Leader: UW Botanic Garden Docent
Contact: kglew@u.washington.edu

Stroll through the University of Washington Botanic Gardens in early spring. You will be escorted by an expert of the gardens past seasonal gardens and wetlands, towards the newest garden – Pacific Connections. Early cherries may be blooming and the winter garden will be at its peak. After the tour, you are welcome to wander through the rest of the arboretum. Tour lasts approximately 90 minutes.

- 9:00 am Puget Lowland Botany and Bryophyte Walk
Shadow Lake Bog, King County
Meeting location: TBA
Leaders: Tracy Fuentes and Guest Bryologist
Contact: tracyfuentes@yahoo.com

Search a mixed conifer, alder, and big leaf maple forest for early spring wildflowers, mosses, and liverworts. Hike will be on and off-trail, pushing aside branches, staring at newly emerged shoots, and peering at twigs. We expect to examine mossy logs, rocks, and trees up close and personal. Bring a hand lens.

x:xx am Geology of the Seattle Area
Leader: Kathy Goetz Troost, Director of the Pacific Northwest Center for
Geologic Mapping, University of Washington
Time and location: TBA
Contact: ktroost@u.washington.edu

This one-day field trip will visit tidal, bluff, intertidal, and steep slopes to view the geology of Seattle. Seattle lies in a unique geologic setting: near a subducting plate and having been glaciated more than 6 times in the last 2 million years. The area is geologically very young and very complex. Seattle is subject to abundant geologic hazards, such as volcanic activity, earthquakes, faulting, landslides, liquefaction, and other ground failures. Even though an urban center may seem an improbable place to find *any* geologic exposures, much less a rich geologic story, such examples abound here. We will visit Tertiary marine rocks, dipping Quaternary interglacial layers, uplifted subtidal sediment, deposits from the last glaciation, and spectacular landslides. The outcrops provide representative views of the deposits and landscape present throughout the Puget Lowland. We will also discuss the evidence for the Seattle fault and the tectonic setting of the Lowland. Be prepared for rain and wear sturdy (waterproof) boots or shoes. Lunch and guidebook will be provided.

Natural Areas in King County

Leader: Rex Crawford and Kelly Heintz, Natural Heritage Program, Washington DNR
8:00 am Johnson Circle on UW campus, entrance off 15th Ave just south of Central
Plaza Parking Garage to carpool.
Alternatively: 9:00 am in North Bend at the U.S. Forest Service Ranger Station at 4204
SE North Bend Way
Contact: rex.crawford@dnr.wa.gov

Management of natural areas focuses on the protection of natural features and the processes supporting them. The rapidly changing environments in urbanizing King County and the range of possible impacts related to climate change create great challenges for Natural Area persistence. This field trip will visit small wetland Natural Area Preserves (NAP) and a large Natural Area Conservation Area (NRCA) managed by the Washington Department of Natural Resources that are 20 miles from UW in Seattle. Sphagnum bog ecosystems, rare in very good condition, that support populations of rare plants and beetles will be visited at the NAPs. The Mount Si NRCA at 9,522 acres includes steep, rugged and mountainous terrain with habitat and a variety of wildlife native mountain goats, cougar, and black bear. The NRCA safeguards unique geologic features, examples of old growth forests, and sensitive plant species and is the most heavily used NRCA in the state. Viewing natural areas of differing sizes provide a face-to-face encounter with conservation biology in a changing world. Rain gear and rubber boots are advised.