

Ethan Welty :: environmental science and photography

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EDUCATION

University of Colorado :: Boulder, CO :: *August 2009 - present*
Ph.D. Candidate - Environmental Studies Program

University of Washington :: Seattle, WA :: *graduated June 2007*
B.S. in Physics & B.S. in Applied Math (GPA 3.8)

EXPERIENCE (present)

Glaciologist :: **Institute of Arctic and Alpine Research, CO** :: *August 2009 - present*

Study tidewater glacier dynamics in Alaska and Svalbard, harnessing computer vision techniques to extract motion and structure from multi-view stereo and time-lapse photography. Evaluate internet photo collections as records of glacier change, and develop citizen re-photography initiatives.

paper Welty, E., W.T. Pfeffer, and S. O'Neel (in prep). Low-cost, high-precision glacier DEMs from aerial snapshots with no ground control. To be submitted to *Journal of Glaciology* and *IEEE Geoscience and Remote Sensing Letters*.

paper Welty, E., W.T. Pfeffer, and S. O'Neel (in prep). Subsecond calibration of digital camera clocks. To be submitted to *Journal of Glaciology* and *IEEE Geoscience and Remote Sensing Letters*.

talk J. A. Jania, E. Welty, D. Ignatiuk, L. Kolondra, S. Kostka, S. Sikora, and P. Biegała (2012). Annual cycle of calving and ice-cliff fluctuations of Hansbreen, a tidewater glacier in southern Spitsbergen, Svalbard. *International Polar Year 2012 From Knowledge to Action Conference* - Montréal, Canada, 22-27 April.

talk Welty, E., W.T. Pfeffer, S. O'Neel, and N. Jacobs (2012). Calving dynamics of the Columbia Glacier, AK (2000-2011 Update). *IASC Network on Arctic Glaciology: Workshop on the Dynamics and Mass Budget of Arctic Glaciers* - Zieloniec, Poland, 10-13 January.

talk Welty, E., W.T. Pfeffer, S. O'Neel, and Y. Ahn (2011). Deriving glacier structure from digital image sequences. *Program for Arctic and Regional Climate Assessment Workshop* - NASA Goddard, MA, 19-21 January.

session Welty, E. and Y. Ahn (2010). *Photography as Data: Applications to the Earth Sciences*. *American Geophysical Union Fall Meeting* - San Francisco, CA, 13-17 December.

Freelance Photographer :: *April 2006 - present*

Award-winning environmental, travel and adventure photographer. Represented by Aurora Select, Wonderful Machine, and Tandem. Clients include Backpacker, Black Diamond, Outside, Discover, and the National Parks Conservation Association. (www.weltyphotography.com)

Environment Committee :: **North American Nature Photography Association** :: *May 2010 - present*

Advise the committee director on scientific photography and citizen science initiatives.

EXPERIENCE (past)

Geographer :: **USGS Cascadia Field Station, WA** :: *June 2007 - August 2009*

Led the geospatial analysis (GIS) of multi-institutional studies of riverine landscapes and conducted spatially continuous fish and habitat snorkel surveys of Northwest wilderness rivers.

paper Welty, E. and C.E. Torgersen (in prep). A multi-scale approach to longitudinal analysis of spatially explicit riverscape survey data. To be submitted to *North American Journal of Fisheries Management*.

paper Brenkman, S.J., J.J. Duda, C.E. Torgersen, E. Welty, G.R. Pess, R. Peters, and M. McHenry (in press). A riverscape perspective of Pacific salmonids and aquatic habitats prior to large-scale dam removal in the Elwha River, Washington, USA. *Fisheries Management and Ecology*.

Photo Editor / Staff Photographer :: **The UW Daily** :: *April 2006 - December 2007*

Managed and developed photography staff, shot assignments on location and coordinated with section editors at a weekday student newspaper with a circulation of 20,000.

Remote Sensing Technician :: Valles Caldera National Preserve, NM :: Summer 2006

Assembled a primary productivity dataset to establish an NDVI (LANDSAT) rangeland monitoring program. Conducted wildlife radio-telemetry, rangeland health and stream morphology transects.

Physics Intern :: Lawrence Livermore National Laboratory, CA :: Summer 2005

Participated in the development of a novel thermal solar power system.

English Teacher :: Harbin Institute of Technology, China :: Summer 2004

Prepared Chinese doctoral students to present research in English at international conferences.

SELECTED HONORS

- 2011 Awarded CU Green Fund Scholarship for Boulder, CO urban arable land inventory
- 2010 International Conservation Photography Awards - 1st Place
- 2010 North American Nature Photography Association - College Scholarship
- 2010 Best of ASMP (American Society of Media Photographers)
- 2009 Bellevue Visual Journalism Conference - Best Student Portfolio
- 2008 Eddie Adams Photography Workshop
- 2007 Sigma Pi Sigma National Physics Honor Society
- 2006 Phi Beta Kappa Honors Society
- 2005 Awarded Dillman Academic Merit Scholarship covering full-year tuition at UW
- 2002 Accepted at age 15 to the UW Honors Program and Academy for Young Scholars

SKILLS

Languages – Bilingual French & English, intermediate Spanish

Computing – Geospatial analysis (*ArcGIS, ENVI*); Numerical analysis and plotting (*MATLAB, R*); Programming (*Bash, Perl, Python*); Web design (*HTML, CSS, PHP, MySQL*); Graphics (*Adobe Photoshop, Illustrator*)

Scientific Photography – Photogrammetry (*MATLAB*); Structure from Motion (*Bundler, CMVS*); Digital Terrain Modeling (*DATEM Summit, Inpho Match-T*); Time-lapse camera systems (*Extreme Ice Survey, Harbortronics*)

OTHER INTERESTS

Philanthropy – Thousands of dollars raised through print sales for non-profits Urban ArtWorks, Himalayan HealthCare, GlobeMed, Wild Foundation, Boulder County AIDS Project, and Stivers School for the Arts. Images donated to the North Cascades Conservation Council and The Mountaineers in support of conservation initiatives in Washington's North Cascades.

Foreign Travel – Canada, Mexico, Belize, Guatemala, Peru, Svalbard, Norway, England, Spain, Italy, Belgium, Germany, Poland, Morocco, Turkey, Israel, Egypt, China, and Nepal. Grew up in France (1989-1998).

Great Outdoors – mountaineering, backcountry skiing, sea kayaking, licensed open water diver.