College of Natural Science and Mathematics

Joan Braddock, Dean

Baccalaureate Degrees

Jennifer A. Addison **
B.S., Wildlife Biology. Golden Key Honor Society

Andrew T. Allen
B.S., Biological Sciences

Suzan Armstrong
B.S., Biological Sciences

Andrea Marie Azan
B.A., Biological Sciences

Rachel Lynn Bachert
B.S., Biological Sciences

Justin R. Bailey
B.S., Biological Sciences

Stephanie Baldwin **
B.S., Biological Sciences

Caroline Barnes **
cum laude, B.S., Biological Sciences

Timothy Barry *
B.S., Mathematics; Physics

Adam W. D. Baxter **
B.S., Chemistry: Biochemistry/Molecular Biology

Celine Michelle Becker **
B.S., Biological Sciences

Alan L. Blair
B.S., Computer Science
Amy Albina Boaro  
*summa cum laude*, B.S., Biological Sciences

Laura Michelle Boomershine  
B.S., Biological Sciences

Ryan Boothe  
B.S., Geology

Nicole Brandt  
B.S., Biological Sciences

Roberta K. Budnik  
B.S., Biological Sciences

Cynthia Marie Bunn **  
B.S., Biological Sciences

Robert A. Burgess  
B.S., Biological Sciences

Lisa Burke  
B.S., Biological Sciences

Sarah J. Byam  
B.S., Applied Physics: Atmospheric Physics. *Student Ambassador*

Christopher Michael Cannon **  
B.S., Wildlife Biology

Seth Chadwick  
*magna cum laude*, B.S., Computer Science

Shawn M. Colburn *  
B.S., Geology

Vélvá M. Combs  
B.S., Biological Sciences

Sandra D. Dasher  
*cum laude*, B.S., Chemistry

Brooke Dattola  
B.S., Health Biosciences: Interdisciplinary Program

Paul Micheal deVries  
B.S., Computer Science

Ian Robert Dixon **  
B.S., Computer Science
Carlise Patricia Eck  
B.S., Biological Sciences. *Student Leadership Honors. Student Ambassador*

Brandi Fleshman  
*cum laude*, B.S., Biological Sciences

Candice R. Flint  
B.S., Biological Sciences. *Golden Key Honor Society. Phi Kappa Phi Honor Society*

Charlene Fortner  
B.S., Biological Sciences

Kevin P. Galloway  
B.S., Computer Science

Daniel J. Glass  
B.S., Biological Sciences

Kieran Gleason  
B.S., Wildlife Biology

Niki Greer **  
B.S., Biological Sciences

Mary Elizabeth Grimes  
B.S., Chemistry

John Gabriel Hagood  
B.S., Biological Sciences; Wildlife Biology

Cristen E. Harrison  
B.S., Biological Sciences

Benjamin Brooks Hartman **  
B.S., Computer Science

Raymund J. Hawley **  
B.S., Computer Science

Adam Shawn Hediger  
B.A., Biological Sciences

Scott Hillard  
B.S., Biological Sciences

Dominic E. Hondolero  
B.S., Biological Sciences

Kelly Houghton  
*cum laude*, B.A., Child Development and Family Studies; Biological Sciences: Curriculum and Teaching
David J. Jacobson **  
B.A., Biological Sciences

M. Alyssa Jeannet  
cum laude, B.S., Biological Sciences. Golden Key Honor Society

Jenna Marie Jones  
cum laude, B.A., Biological Sciences

Aleria Helene Knudson  
B.S., Geology

Timothy Allen Kvitek  
B.S., Computer Science

Don Larson  
B.S., Biological Sciences

Neil Scott Lehner **  
B.S., Wildlife Biology

Cullan C. Lester *  
B.S., Geology

David Francis Luecke  
B.S., Biological Sciences

Jeffery D. Mayfield  
B.S., Wildlife Biology

Brian McNulty *  
B.S., Geology: Economic Geology

Zachary Meyers **  
magna cum laude, B.S., Biological Sciences

Shandra Lynn Miller **  
B.S., Chemistry: Environmental Chemistry

Kathryn Carey Mohrman **  
magna cum laude, B.S., Biological Sciences

Melissa D. Nelson  
B.S., Wildlife Biology

Caleb Nichols  
B.S., Biological Sciences

Nansen H. Olson III *  
B.S., Geology
Julieanna Orczewska
*magna cum laude*, B.A., Biological Sciences; Psychology

Rev Bui Orion
B.A., Biological Sciences

Brandon C. Otts
B.S., Wildlife Biology

Jacob Owens
*cum laude*, B.A., Biological Sciences

Mitali Shirish Patil
*magna cum laude*, B.S., Biological Sciences. *Golden Key Honor Society. Phi Kappa Phi Honor Society*

Randy Louis Peterson
B.S., Statistics. *Honors Program*

William D. Pfeifer, Jr.
B.S., Computer Science

Elizabeth Ann Pollen **
B.A., Biological Sciences

Amy R. Rask
*magna cum laude*, B.S., Chemistry; Biochemistry/Molecular Biology. *Honors Program*

Aren Ray
B.S., Computer Science

Megan Eileen Read **
B.S., Biological Sciences

Christopher Reynolds
B.A., Biological Sciences

Carl Alexander Roberts
B.S., Wildlife Biology

Scott Alan Roberts *
B.S., Geology

Nicole Marie Robinson
B.S., Statistics

Alexander Chico Rodriguez
B.A., Biological Sciences

Alexander John Ross *
B.S., Mathematics
William C. Ross **
B.S., Computer Science

Thomas A. Samuels, Jr. **
B.A., Geoscience

Jay Schamel
B.S., Mathematics

Jay Schamel
B.S., Computer Science

Shannon L. Scouten
B.S., Biological Sciences

Aniel I. Seesan **
B.S., Computer Science

Lisa Kim Smith
B.S., Biological Sciences

Samantha Jenny Smith
B.S., Chemistry: Biochemistry/Molecular Biology

Aurora Alice Suchland **
B.S., Biological Sciences

Brian Teachworth
B.S., Wildlife Biology

Travis Veazey
B.S., Computer Science

Jason Ryan Weed
B.S., Computer Science

Aemon Wetmore
magna cum laude, B.S., General Science

Christina L. Whitmore **
B.S., Geology

Master's Degrees

Amy Catherine Angell *
M.S., Botany. B.A., Connecticut College, 2005
Rebecca Delafield Bailey *
M.S., Geology. B.A., Western State College of Colorado, 1999

Kelly Balcarczyk
M.S., Biology. B.S., Rochester Institute of Technology (New York), 2004

John William Bannister
M.S., Statistics. B.A., Reed College (Oregon), 1998

Walter Barnes
M.S., Computer Science. B.S., University of Alaska Fairbanks, 2006

Emily Louise Bernhardt
M.S., Biology. B.S., Alaska Pacific University, 2003

Peter Anthony Bieniek **
M.S., Atmospheric Sciences. B.S., Valparaiso University (Illinois), 2005

Erik D. Brandlen
M.S., Geology. B.S., University of Texas at Dallas, 2003

Lea A. Burris **
M.S., Geophysics: Solid-Earth Geophysics. B.S., Kutztown University of Pennsylvania, 2004

Kun Chen *
M.S., Statistics. B.E., University of Science and Technology of China (P. R. China), 2003

Njideka Chukwu
M.A., Chemistry. B.S., University of Oklahoma, 2006

Patrick Cobb
M.S., Atmospheric Sciences. B.A., Boston University, 2001

Alec S. Duncan *
M.S., Geology. B.A., Hamilton College (New York), 2001

Aren Mark Gunderson **
M.S., Wildlife Biology. B.A., University of Northern Iowa, 2002

Lesa Hollen
M.S., Neuroscience Visualization: Interdisciplinary Program. B.S., University of Alaska Fairbanks, 2004

Steven Houston **

Elchin Jafarov *

James R. Jasper
M.S., Statistics. B.S., University of Alaska Southeast, 1994
Daniel Jones **
M.S., Geology. B.A., Augusta College (Illinois), 2004

Pavan Kumar Reddy, Kankanala **
M.S., Atmospheric Sciences. B.T., Nagarjuna Institute of Technology and Sciences (India), 2002

Jennifer Lee Kreinheder
M.S., Statistics. B.A., University of Alaska Fairbanks, 2001

David William Knavek
M.S., Computer Science. B.S., Montana State University Bozeman, 2002

Sayali D. Kulkarni **
M.S., Biochemistry and Molecular Biology. B.A., Tilok Medical College (India), 2005

Christopher J. Latty
M.S., Wildlife Biology. B.S., Grand Valley State University (Michigan), 2000

Rachel E. Lord
M.S., Biology. B.A., Mount Holyoke College (Massachusetts), 2002

Sreepurna Malakar
M.S., Biochemistry and Molecular Biology. Golden Key Honor Society. B.S., Surendranath College (India), 1997. M.S., Calcutta University (India), 1999

Kate Helene Martin *
M.S., Wildlife Biology. B.S., University of Montana, 2002

Robert Bruce Medhurst *
M.S., Biology. B.S., University of Wisconsin Stevens Point, 1999

Brandt W. Meixell *
M.S., Wildlife Biology. B.A., Concordia College Moorhead (Minnesota), 2002

Corinne Munger *
M.S., Biology. B.A., University of California Santa Cruz, 2002

Susan Oehlers *
M.S., Wildlife Biology. B.S., University of Minnesota, 1994

Joshua M. Peirce *
M.S., Wildlife Biology. B.S., University of Vermont, 1993

John Brent Ritchie *
M.S., Geophysics. B.S., Grand Valley State University (Michigan), 2004

Lance Roberts
M.S., Computer Science. B.S., University of Alaska Fairbanks, 1997

Raena J. Rowland
M.S., Environmental Chemistry. B.S., University of Alaska Fairbanks, 2004
Justine Sears **
M.S., Biology. B.S., University of Vermont, 2001

Alan W. Shay **
M.S., Statistics. B.S., Pennsylvania State University, 2004

Mariah Roberts Tilman
M.S., Geology: Volcanology. B.S., Northern Arizona University, 1996. B.S., University of Hawaii Manoa, 2005

Carrie M. Topp
M.S., Biology. B.A., University of Alaska Fairbanks, 2000

Evan Twelker *
M.S., Geology. B.A., Middlebury College (Vermont), 2004

Katie Lin Villano
M.S., Biology. B.A., Whitman College (Washington), 2003

Haiting Wan *
M.S., Biology. B.S., Shandong University (P. R. China), 1995

Trista I. Welsh
M.S., Biology. B.S., Humboldt State (California), 2003

Jesse Garnett White **
M.S., Geology: General Geology. B.S., University of Idaho, 2003

Kristen Williams
M.S., Environmental Chemistry. B.S., Ball State University (Indiana), 2004

Jia Wu
M.S.E., Software Engineering. B.S., University of Alaska Fairbanks, 2005

Xian Yu **

Doctoral Degrees

Michael S. Balshi **
Ph.D. Biological Sciences: Biology
B.S., Johnson State College (Vermont), 2000. M.S., University of Cambridge (England), 2002

Thesis: The Role of Fire in the Carbon Dynamics of the Boreal Forest
Wildfire is a common occurrence across the boreal forest and affects both the structure and functioning of these ecosystems. My research evaluated the role of historical and future wildfires in the carbon dynamics of the boreal forest in the context of increasing atmospheric CO₂ and a changing climate.
Major Professor: Dr. A. David McGuire
Colin Mitchell Beier *
Ph.D. Biological Sciences: Biology
B.S., Virginia Commonwealth College, 1999. M.S., Virginia Polytechnic Institute and State University, 2002

Southeast Alaska’s ecosystems and social systems are shaped largely by regional climate and resource management on public lands (Tongass National Forest); both factors have experienced strong drivers of change during the twentieth century. My research draws from several disciplines to examine outcomes of contemporary social and ecological change in Southeast Alaska.

Major Professors: Dr. A. David McGuire and Dr. F. Stuart Chapin III

Richard R. Bernhardt
Ph.D. Biological Sciences: Wildlife Biology
B.S., University of Alaska Anchorage, 2002

Thesis: The Effects of Perchlorate Exposure on a Model Vertebrate Species: The Threespine Stickleback
The present research demonstrates that perchlorate, a widespread but unregulated contaminant in the United States, is harmful at environmentally relevant concentrations. Using the threespine stickleback (Gasterosteus aculeatus) as a model, perchlorate was shown to impair growth, swimming performance, somatic and reproductive development, fecundity, reproductive behavior, survivorship and fitness.

Major Professors: Dr. Todd Michael O’Hara and Dr. Frank Von Hippel

Joseph R. Galbraith **
Ph.D. Physics
B.S., Montana State University, 2000

This work characterized the infrasonic noise field at two arrays operated by UAF. The estimated noise field was not the assumed white, uncorrelated noise field. The effects of the noise field on the estimation of azimuth and trace velocity were determined and compared to the estimates with standard noise assumptions.

Major Professor: Dr. Curt Albert Szuberla

Claudia Ihl *
Ph.D. Biological Sciences: Biology
B.S., University of Goettingen (Germany), 1991. M.S., University of Alaska Fairbanks, 1999

This research investigated the nutritional value of moss and the ecological significance of moss intake on wintering areas of arctic ungulates in northwest Alaska, examined group movements and leadership in mixed-sex muskox groups during summer and rut, and concludes with a conceptual model of fission and fusion in muskox groups.

Major Professors: Dr. Roger W. Ruess and Dr. David R. Klein

Zhao Li *
Ph.D. Atmospheric Sciences
B.S., Lanzhou University (China), 2002

Thesis: Investigations on the Impacts of Land-Cover Changes and/or Increased CO₂ Concentrations on Four Regional Water Cycles and Their Interactions with the Global Water Cycle
A climate model and various statistical skill scores were applied to investigate the impacts of land-cover changes on water cycles under increasing CO₂. The results show enhanced interactions between different water cycles and non-
linear behaviors of the impacts of land-cover changes under different CO₂ concentrations.

**Major Professor: Dr. Carmen Nicole Mölders**

**Reginald R. Muskett *
Ph.D. Geophysics
B.S., University of Alabama at Birmingham, 1983. M.S., University of Akron (Ohio), 1998**

The first comprehensive estimates of the net mass balances of the Bering and Malaspina glacier systems, the effects of glacier dynamics on their accumulation areas, their combined contribution to global sea-level rise from 1972 to 2003 and the wastage of the tidewater glaciers at Icy Bay are presented in this dissertation.

**Major Professor: Dr. Craig S. Lingle**

**Dmitry J. Nicolsky **
Ph.D. Numerical Modeling of Natural Systems: Interdisciplinary Program
B.S., Saint Petersburg State University (Russia), 2000. M.S., University of Alaska Fairbanks, 2003

**Thesis: Numerical Modeling of Seasonally Freezing Ground and Permafrost**
A data assimilation technique to find soil properties by exploiting measured soil temperatures is presented. The recovered properties are used to model differential frost heave within non-sorted circles in the Alaskan tundra. Finally, in order to simulate permafrost dynamics on the global scale, several improvements to Global Circulation Models are suggested.

**Major Professor: Dr. Vladimir E. Romanovsky**

**Sabra Louise Reid **
Ph.D. Geology
B.S., University of Alaska Anchorage, 1981. M.A., Alaska Pacific University, 1999

**Thesis: Evidence for a Northern Transitional Continental Margin Flora in the Cretaceous (Campanian to Maastrichtian) Matanuska Formation, Talkeetna Mountains, Southcentral Alaska**
The subtropical Upper Cretaceous Matanuska paleoflora, frequently disturbed by volcanic events, was a northern continental margin flora that flourished along a dispersal corridor between Russia and western North America. The Lower Cantwell flora represents a drier paleoecosystem, while the arctic coastal Prince Creek flora lived in a cool, dry region.

**Major Professor: Dr. Sarah J. Fowell**

**Erica Marie Rodgers **
Ph.D. Space Physics

Solar flares primarily enhance the soft X-ray irradiance between 1 - 2 nanometers and deposit most of their energy between 100 - 110 kilometers where peak nitric oxide production occurs. Large flares can double the 0.1 - 2- and 0.1 - 7-nanometer daily integrated energy to the thermosphere, thus doubling the nitric oxide column density.

**Major Professor: Dr. Dirk Lummerzheim**

**Jennifer Schmidt *
Ph.D. Biological Sciences: Wildlife Biology
B.S., University of Minnesota Twin Cities, 1999**
Thesis: Ecological and Social Influences on Population Dynamics and Genetics of Moose in Alaska
This dissertation explored the effects of ecological and social components on Alaskan moose population dynamics and genetics. With these two components, I explored catch-per-unit effort, antler size and population structure. I concluded that inclusion of ecological and social features greatly improves population dynamics and structure knowledge for moose in Alaska.

Major Professor: Dr. Kevin G. McCracken

Ronald J. Tavernier, Jr. *
Ph.D. Biological Sciences: Biology
B.S., University of Alaska Fairbanks, 1997

Thesis: Circadian Rhythms, Neuroanatomy of the Suprachiasmatic Nucleus and Selective Breeding of the Northern Red-Backed Vole (Clethrionomys rutilus)
Daily rhythms of northern red-backed voles were found to be variable in constant light and dark. The mammalian master clock in the hypothalamus was investigated for common neurotransmitters and a few differences noted. An attempt was made to selectively breed voles with and without circadian rhythms in constant dark.

Major Professor: Dr. Abel Bult-Ito