

# THE CLASS OF 2010

## DOCTOR OF PHILOSOPHY DEGREES



### COLLEGE OF ENGINEERING AND MINES

*Dr. Douglas J. Goering, Dean*

#### **Winston Starr Burbank, Jr. \***

**Ph.D. Engineering: Mechanical Engineering**

*B.S., Oregon State University, 2004. M.S., University of Alaska Fairbanks, 2006*

**Thesis: Modeling of a Novel Triple Turbine Solid Oxide Fuel Cell Gas Turbine Hybrid Engine with a 5:1 Turndown Ratio**

A novel solid oxide fuel cell/gas turbine (SOFC-GT) hybrid modeled over a 5:1 turndown ratio. Utilizing two control variables allows the hybrid to maintain the SOFC stack exit temperature at 1000°C. The inexpensive turbomachinery contributes half the rated power and is expected to lower system costs compared to previous hybrids.

**Major Professor: Dr. Dennis E. Witmer**

#### **Agota Horel \***

**Ph.D. Engineering: Environmental Engineering**

*B.S., Szechenyi Istvan Foiskola (Hungary), 1998. B.S., University of Alaska Anchorage, 2005*

**Thesis: Biodegradation of Petroleum and Alternative Fuel Hydrocarbons in Moderate to Cold Climates**

This thesis focuses on the investigation of the physical and chemical parameters and environmental effects on biodegradation by naturally occurring microorganisms for hydrocarbon fuels in terrestrial subsurface, and determining the overall fate of hydrocarbons in soil, including degradation by fungi and bacteria, volatilization, and transport in the soil.

**Major Professor: Dr. Silke Schiewer**

**Yu Zhang \*\***

**Ph.D. Engineering: Civil Engineering**

B.S., Zhejiang University of Technology (People's Republic of China), 2000. M.S., Southeastern University (People's Republic of China), 2003

**Thesis: Impact of Freeze-Thaw on Liquefaction Potential and Dynamic Properties of Mabel Creek Silt**

Liquefaction potential and post-cyclic loading settlement were investigated for a fine-grained soil that caused significant geotechnical hazards during the November 2002 Alaska earthquake. Cyclic triaxial testing results show that near-freezing temperatures increase the liquefaction potential while freeze-thaw cycles can improve soil's stiffness, reduce settlement and lessen risk of liquefaction.

**Major Professors: Dr. J. Leroy Hulsey and Dr. Kenan Hazirbaba**

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\* Summer degree recipient

\*\* December degree recipient



# COLLEGE OF LIBERAL ARTS

*Dr. Eric Heyne, Interim Dean*

## **Jennifer Carroll**

### **Ph.D. Anthropology**

*B.A., Harvard-Radcliffe College (Massachusetts), 1990. M.A., University of Alaska Fairbanks, 1995*

#### **Thesis: Maybe an Answer is in There: Life Story in Dialogue**

This dissertation explores the ways Gwich'in women's lives have changed through the life story and historical and cultural reflections of Vera Englishoe, a Neets'ąjį Gwich'in woman from Venetie and Fort Yukon. It uses a dialogic approach to explore how meaning is negotiated between the storyteller and multiple audiences.

**Major Professor: Dr. William S. Schneider**

## **Medea Csoba DeHass \*\***

### **Ph.D. Anthropology**

*M.A., Eotvos Lorand University (Hungary), 2002*

#### **Thesis: Sugpiaq Russian Orthodoxy — Conceptual Analogy in Religious Syncretism in Nanwalek, Alaska**

This dissertation focuses on Sugpiaq Russian Orthodoxy, as it is formulated in culture-specific analogies and conceptualized through the process of religious synthesis. It explores how people interpret certain aspects of their religion according to their own ontological reality, in order to integrate foreign religious ideas into the local cultural context.

**Major Professor: Dr. Peter P. Schweitzer**

## **Theresa John**

### **Ph.D. Indigenous Studies**

*B.A., University of Alaska Fairbanks, 1983. M.Ed., University of Alaska Fairbanks, 1992*

#### **Thesis: Yuraryararput Kangiit-Ilu: Our Ways of Dance and Their Meanings**

The first purpose of this study was to describe the categories of dance. The second purpose was to describe how Yup'ik music and dance have played a functional role in organizing and maintaining various societal infrastructures within the Yup'ik culture. This study sought to further understand this role and how it has evolved over time.

**Major Professors: Dr. Joan Parker Webster and Dr. Raymond Barnhardt**

## **Jordan Paul Lewis \*\***

### **Ph.D. Cross-Cultural Community Psychology: Interdisciplinary Program**

*B.A., University of Alaska Fairbanks, 1999. M.A., Washington University (Missouri), 2000*

#### **Thesis: Successful Aging Through the Eyes of Alaska Native Elders: What It Means to be an Elder in Bristol Bay, Alaska**

The lack of a culturally specific definition often results in the use of a generic definition that portrays Alaska Native Elders as aging less successfully than their non-Native counterparts. This research explores the concept of successful aging from an Alaska Native perspective and highlights the four domains of successful aging or Eldership.

**Major Professor: Dr. Gerald V. Mohatt**

## **Philip A. Loring**

### **Ph.D. Indigenous Studies**

B.A., Florida Atlantic University, 2005. M.A., University of Alaska Fairbanks, 2007

#### **Thesis: Ways to Help and Ways to Hinder: Climate, Health, and Food Security in Alaska**

This dissertation explores various dimensions of health and food security in Alaska. The context is dramatic climatic change and ongoing socioeconomic and cultural transitions in Alaska's rural and urban communities, covering topics like methylmercury contamination and the impacts of environmental change on subsistence and commercial activities.

Major Professor: Dr. S. Craig Gerlach

## **Shannon Michele McNeeley \***

### **Ph.D. Environmental Change and Sustainability Science: Interdisciplinary Program**

B.A., Bowling Green State University (Ohio), 1991. M.A., Monterey Institute of International Studies (California), 1998

#### **Thesis: Seasons Out of Balance: Climate Change Impacts, Vulnerability, and Sustainable Adaptation in Interior Alaska**

Native communities in the Koyukuk-Middle Yukon region report an inability to satisfy their needs for harvesting moose before the hunting season closes, citing warmer falls, changing water levels, and the regulatory framework as primary causes. By combining indigenous observations and western social-natural sciences, this study examines the complex, multi-scaled interaction of climate change and subsistence livelihoods.

Major Professors: Dr. S. Craig Gerlach and Dr. F. Stuart "Terry" Chapin III

## **Jody J. Patterson**

### **Ph.D. Anthropology**

B.A., New Mexico Highlands University, 1994. M.A., New Mexico Highlands University, 1996

#### **Thesis: Landscape Structure and Terrain-Based Hunting Range Models: Exploring Late Prehistoric Land Use in the Nutzotin Mountains, Southcentral Alaska**

Using large mammal distributions and modern hunting range data from 21 Interior Alaska villages, landscape structure was examined to identify patterns amenable to modeling prehistoric hunting land use in the Nutzotin Mountains. Significant correlations between landscape structure and chipped stone tools indicate multiple hunting strategies occurred in the region.

Major Professor: Dr. Maribeth S. Murray

## **Lianne Williamson \***

### **Ph.D. Women's Studies: An Interdisciplinary Program**

B.A., American University (Washington, D.C.), 1988. M.A., Johns Hopkins University (Maryland), 1996

#### **Thesis: Inconsistent Endeavors: The Elusiveness of the Anti-Heroine**

This project was to find the markers and signifiers for the character of the anti-heroine. Research has shown that she is an extremely elusive character and is quite different from the anti-hero. She defies stereotyping, is a complex creation, may or may not be beautiful and acts rather than reacts.

Major Professors: Dr. Derick W. Burleson and Dr. Roy K. Bird

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\* Summer degree recipient

\*\* December degree recipient



# COLLEGE OF NATURAL SCIENCE AND MATHEMATICS

*Dr. Paul W. Layer, Interim Dean*

## **Jason A. Addison \*\***

### **Ph.D. Geology**

*B.S., University of Washington, 2004. B.S., University of Washington, 2004*

**Thesis: High-Resolution Paleoceanography of the Gulf of Alaska, Subarctic Northeast Pacific Ocean, Since the Last Glacial Maximum: Insights Into a Dynamic Atmosphere-Ocean-Ecosystem Linkage at Decadal to Millennial Timescales**

Marine sediment cores from the continental margin of the Gulf of Alaska were analyzed to reconstruct environmental changes over the last 18,000 years. Biogeochemical proxies document marine ecosystem variability linked to high-latitude climate change, including the Pacific Decadal Oscillation, and abrupt climate events during the transition into modern Holocene conditions.

**Major Professors: Dr. Bruce P. Finney and Dr. James E. Begét**

## **Leslie Deanne Almberg**

### **Ph.D. Geology**

*B.S., University of Washington, 2001. M.S. University of Alaska Fairbanks, 2003*

**Thesis: Temporal-Spatial Micro-Scale Investigations of Shallow Silicic Conduits: Late-Stage Degassing, Crystallization, and Alteration**  
Investigations of four dome-forming volcanoes, Bezymianny, Unzen, Mount St. Helens and Obsidian Dome, elucidate processes of magma transport, post-emplacement evolution and textural development. This research constrained magmatic ascent rates via decompression crystallization experiments, revealed mineralogical evidence for extremely rapid alteration, and quantified bubble anisotropy and three-dimensional structures using X-ray tomography.

**Major Professor: Dr. Jessica F. Larsen**

## **Jason Amundson**

### **Ph.D. Geophysics**

*B.S., University of Minnesota, Twin Cities, 2003. M.S., University of Alaska Fairbanks, 2006*

**Thesis: Iceberg Calving Dynamics of Jakobshavn Isbræ, Greenland**

Timelapse photography, seismic and audio recordings, iceberg and glacier motion surveys, and ocean wave measurements were used to study processes controlling iceberg calving at Jakobshavn Isbræ, Greenland. These field observations were used to aid development of a framework for iceberg calving models that can be applied to any calving glacier.

**Major Professor: Dr. Martin Truffer**

**Brian Michael Barth \***

**Ph.D. Biochemistry and Molecular Biology: Neuroscience Option**

B.S., Colorado State University, 2004

**Thesis: Ceramide Metabolism Regulates a Neuronal NADPH Oxidase  
Influencing Neuron Survival During Inflammation**

Inflammation is a major component of neurodegeneration. This research demonstrated that neuroinflammation, through the bioactive sphingolipids ceramide and ceramide-1-phosphate, stimulated a neuronal NADPH oxidase, subsequently interfering with neuronal actin cytoskeleton and pro-survival sphingosine kinase. This study paves the way for future therapeutic development to improve neuronal function and survival.

Major Professor: Dr. Thomas B. Kuhn

**Rebecca Leah Bentzen \*\***

**Ph.D. Biological Sciences: Wildlife Biology**

B.A., University of Alaska Fairbanks, 1998

**Thesis: Reproductive Patterns in King Eiders**

A conceptual model was created to identify selective forces impacting waterfowl nesting strategies. The model was tested using King Eiders (*Somateria spectabilis*) breeding in northern Alaska. It appeared that food availability varied between sites and that this was a valid approach to identifying selective forces impacting nesting strategies.

Major Professor: Dr. Abby N. Powell

**Todd J. Brinkman \***

**Ph.D. Biological Sciences: Wildlife Biology**

B.S., Minnesota State University Mankato, 2000. M.S., South Dakota State University, 2003

**Thesis: Resilience of a Deer Hunting System in Southeast Alaska: Integrating Social, Ecological, and Genetic Dimensions**

The interactions of social, ecological and genetic components of a hunting system of Sitka black-tailed deer (*Odocoileus hemionus sitkensis*) were examined on Prince of Wales Island, Alaska, to address concerns of hunters and to provide a new scientific tool to more effectively monitor deer populations.

Major Professors: Dr. F. Stuart "Terry" Chapin III and Dr. Kris J. Hundertmark

**Cord M. Brundage**

**Ph.D. Biological Sciences: Biology**

B.S., Colorado State University, 2004. M.S., University of Alaska Fairbanks, 2008

**Thesis: Neuroplasticity and Neurotoxicology: Central Breathing Control  
Following Developmental Nicotine or Ethanol Exposure**

Developmental exposure to nicotine or ethanol may contribute to sudden infant death syndrome by impairing control of breathing. This research quantified central responses to breathing stressors following nicotine or ethanol exposure. Impairments were seen in responses to low oxygen or high carbon dioxide supporting the possible link to SIDS.

Major Professor: Dr. Barbara E. Taylor

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\* Summer degree recipient

\*\* December degree recipient

**Anna S. Bulanova \***

**Ph.D. Mathematics**

*B.S., St. Petersburg State University (Russia), 2002*

**Thesis: Control Theoretic Approach to Sampling and Approximation Problems**

The overall theme of the thesis is the application of methods of control theory to problems in signal processing and numerical integration. The project demonstrated how control theoretical ideas can be applied to the problem of sampling and interpolation, the spectral estimation problem, and non-standard approximation problems.

**Major Professor: Dr. Sergei A. Avdonin**

**Andrea E. Corcoran \*\***

**Ph.D. Biological Sciences: Zoology**

*B.S., University of British Columbia (Canada), 2003*

**Thesis: Serotonergic and Hypocretinerinic Systems Modulate Ventilation and Hyercapnic Ventilatory Responses**

The involvement of 5-HT neurons in CO<sub>2</sub> chemosensitivity was investigated. This is of interest as a number of SIDS cases report dysfunction in the 5-HT system. Since SIDS occurs primarily during sleep, the project focused on the interaction between 5-HT and hypocretinerinic systems, as hypocretins play roles in arousal and chemosensitivity.

**Major Professor: Dr. Michael B. Harris**

**Michel dos Santos Mesquita \*\***

**Ph.D. Atmospheric Sciences**

*B.A., Federal University of Pelotas (Brazil), 1999. M.A., University of Bergen (Norway), 2006*

**Thesis: Characteristics and Variability of Storm Tracks in the North Pacific, Bering Sea and Alaska**

Storm activity in the North Pacific, Bering Sea and Alaska regions was investigated using automated storm-tracking algorithms. Climatological details of storm activity and sea ice variability are presented. A synoptic-scale severe storm event is considered in the context of how different algorithms depict it.

**Major Professor: Dr. David E. Atkinson**

**Christopher Thomas Fallen**

**Ph.D. Space Physics**

*B.S., Fort Lewis College (Colorado), 2000. M.A., University of Kansas, 2004*

**Thesis: Applications of a Time-Dependent Polar Ionosphere Model for Radio Modification Experiments**

Experiments were conducted with high-power radio-waves to heat the electrons in the Earth's ionosphere. Heating changes the ionospheric structure and induces optical emissions. A numerical computer simulation was developed that incorporates the physics and chemistry of the atmosphere to understand the observed effects and to predict new phenomena.

**Major Professor: Dr. Brenton J. Watkins**

## **Peter Paul Flaig**

### **Ph.D. Geology**

*B.S., University of Wisconsin Milwaukee, 2002*

**Thesis: Depositional Environments of the Late Cretaceous (Maastrichtian) Dinosaur-Bearing Prince Creek Formation: Colville River Region, North Slope, Alaska**

The Prince Creek Formation contains meandering trunk channels, meandering and anastomosed distributary channels, splays, levees, lakes, ponds, swamps, paleosols and ash. Most deposition occurred on crevasse splay-complexes. Inclined heterolithic stratification suggests tidal-influence. Cumulative/compound soils are similar to Entisols, Inceptisols, and acid sulfate soils. Dinosaur bones are preserved in hyperconcentrated flows.

**Major Professor: Dr. Paul J. McCarthy**

## **Matthew D. Gardine**

### **Ph.D. Geophysics**

*B.S., Colorado School of Mines, 2005*

**Thesis: Tracing the Movement and Storage of Magma in the Crust Through Seismology: Examples from Alaska and Western Mexico**

This study looked at the deep crustal velocity structure at Colima Volcano, Mexico, using seismic tomography; analyzed temporal seismic and stress regimes at Paricutin Volcano, Mexico, and studied the seismic and gas emissions at Fourpeaked Volcano, Alaska, to gain insight into interaction of magma with the crust beneath different volcanic systems.

**Major Professor: Dr. Michael E. West**

## **John Craighhead George \*\***

### **Ph.D. Biological Sciences: Wildlife Biology**

*B.S., Utah State University, 1976*

**Thesis: Growth, Morphology and Energetics of Bowhead Whales (*Balaena mysticetus*)**

Bowhead whales, harvested by Inupiat hunters, were investigated with respect to age, growth, morphology and energetics. Analysis indicated that bowheads likely mature in their mid-20s, live to 150 years, and have low body core temperatures and metabolic rates. These traits are likely associated with living year-round in arctic seas.

**Major Professor: Dr. Erich H. Follmann**

## **Sally J. Gustafson**

### **Ph.D. Biochemistry and Molecular Biology: Neuroscience Option**

*B.S., University of Alaska Fairbanks, 2007*

**Thesis: Natural Compounds Isolated from Wild Alaska Bog Blueberries**

**Intervene with Molecular Targets in Neuroinflammation**

NADPH Oxidase (NOX) is a mediator of inflammation associated with pathologies of the nervous, cardiovascular and immune systems. Pharmaceutical interventions for NOX remain non-existent. These investigations revealed natural compounds in wild Alaska bog blueberries that inhibit NOX-mediated oxidative stress and protect neuronal health.

**Major Professor: Dr. Thomas B. Kuhn**

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\* Summer degree recipient

\*\* December degree recipient



## **Max P. Kullberg**

**Ph.D. Biochemistry with an emphasis on Drug Delivery: Interdisciplinary Program**

B.S., California Institute of Technology, 2000

**Thesis: Targeting of Her-2 Overexpressing Breast Tumor Cells with Immunoliposomes**

Overexpression of the growth receptor Her-2 occurs in 20 - 25 percent of breast tumors and is associated with an aggressive cancer. The goal of this research was to target Her-2 overexpressing tumor cells using immunoliposomes that encapsulate a cytotoxin. Selective delivery and killing of the breast tumor cells were demonstrated in vitro.

Major Professors: Dr. Jesse Owens Jr. and Dr. Thomas B. Kuhn

## **Hayley Christine Stover Lanier**

**Ph.D. Biological Sciences: Biology**

B.S., University of Kansas, 2004

**Thesis: Phylogeography, Ecogeographic Variation, and Evolutionary History of the Collared Pika (*Ochotona collaris*)**

This project examined the evolutionary history, ecogeographic variation, and phylogeographic history (single species and comparative) of collared pikas (*Ochotona collaris*; Lagomorpha). Collared pikas exhibit lower within-species divergences, genetic variation, and morphological variation than other congeneric or codistributed mammals. They also show chronoecogeographic variation related to latitude, temperature and differential seasonal selection.

Major Professor: Dr. Link E. Olson

## **Dawn Robin Magness \***

**Ph.D. Biological Sciences: Wildlife Biology**

B.S., University of Montana, 1995. M.S., Texas A&M University, 2003

**Thesis: Managing the National Wildlife Refuge System with Climate Change: The Interaction of Policy, Perceptions, and Ecological Knowledge**

The National Wildlife Refuge System is committed to conserving fish, wildlife and plants for current and future generations of Americans. This project explored how ecological context, policy, perceptions and available ecological knowledge inform climate change adaptation strategies on refuge lands.

Major Professor: Dr. Falk Huettmann

## **Colin Michael McGill**

**Ph.D. Biochemistry and Molecular Biology**

B.S., University of Alaska Fairbanks, 2001. M.S., University of Alaska Fairbanks, 2005

**Thesis: Biologically Relevant Secondary Metabolites of *Vaccinium uliginosum*: Bioassay-Directed Natural Products Identification of Anti-Neuroinflammatory Agents in the Alaska Bog Blueberry**

Dietary blueberry supplementation has demonstrated numerous health benefits including improved learning and memory in neurodegenerative models, neuroprotection from ischemic events, and anti-diabetic properties. Five anti-neuroinflammatory secondary metabolites of *Vaccinium uliginosum*, the Alaska bog blueberry, were isolated. The identification of these compounds provides insight as to the benefits of blueberry consumption.

Major Professor: Dr. Thomas P. Clausen

**Victor S. Mikhailov \*\***

**Ph.D. Mathematics**

*B.S., St. Petersburg State University (Russia), 2000*

**Thesis: Control and Inverse Problems for One Dimensional Systems**

The boundary controllability for the wave, heat and Schrodinger equations on a metric tree was proved. The inverse boundary problem for the in-plane motion of a tree-like network of elastic strings was solved. Inverse dynamical and spectral problems for the Schrodinger operator on the half line were also studied.

**Major Professor: Dr. Sergei A. Avdonin**

**Anshul Pandya \*\***

**Ph.D. Biochemistry and Molecular Biology: Neuroscience Option**

*B.O., University of Pune (India), 1999*

**Thesis: Pharmacology of a Novel Class of Allosteric Modulators for the Alpha4 Beta2 Sub-Type of Neuronal Nicotinic Acetylcholine Receptors**

This thesis describes the actions of synthetic Desformylflustrabromine on neuronal nicotinic acetylcholine receptors. Desformylflustrabromine and three of its chemical analogues are selective positive allosteric modulator of alpha4 beta2 receptors subtype versus the alpha7 receptors subtype. Desformylflustrabromine represents a new class of positive allosteric modulator for neuronal nicotinic acetylcholine receptors.

**Major Professor: Dr. Marvin K. Schulte**

**Daniel J. Rinella**

**Ph.D. Biological Sciences: Biology**

*B.S., Lake Superior State University (Michigan), 1996. M.S., Auburn University (Alabama), 2002*

**Thesis: Marine-derived Nutrients in Riverine Ecosystems: Developing Tools for Tracking Movement and Assessing Effects in Food Webs on the Kenai Peninsula, Alaska**

Marine-derived nutrients (MDN) delivered by spawning Pacific salmon (*Oncorhynchus* spp.) contribute to the productivity of riverine ecosystems. Optimizing measurements of MDN assimilation and effects will foster ecologically based resource management. This dissertation examines relationships among spawning salmon abundance, biochemical measures of MDN assimilation, and the fitness of stream-dwelling fishes.

**Major Professor: Dr. Mark S. Wipfli**

**Debasmita Samaddar**

**Ph.D. Physics**

*B.S., University of Calcutta (India), 2001. M.S., University of Madras (India), 2003. M.S., University of Delaware, 2005*

**Thesis: Improved Modeling of Turbulent Transport: From Noise in Transport Models to the Parareal Algorithm Applied to Full Turbulence Codes**

In addition to improving the performance of a 1D transport model by the addition of noise, a new way of simulating turbulence has been presented, namely time-parallelization. Although counter-intuitive, time-parallelization, or the parareal algorithm, works successfully for such systems and ushers numerous opportunities for turbulence simulations.

**Major Professor: Dr. David E. Newman**

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\* Summer degree recipient

\*\* December degree recipient

## **Todd Sformo \*\***

### **Ph.D. Biological Sciences: Biology**

B.A., John Carroll University (Ohio), 1986. M.A., State University New York at Buffalo, 1993.

M.F.A., University of Alaska Fairbanks, 1995. M.S., University of Alaska Fairbanks, 2003

### **Thesis: Overwintering Physiology of Arctic and Subarctic Insects from Interior Alaska**

This dissertation focuses on the overwintering of insects from Interior Alaska: *Elasmotethus interstinctus* and *Cucujus clavipes puniceus* are freeze-avoiding and *Exechia nugatoria* is simultaneously freeze-avoiding and freeze-tolerant. The variability within the freeze-avoidance strategy itself is a key theme throughout this dissertation.

Major Professors: Dr. Brian M. Barnes and Dr. John Duman

## **Kalb Stevenson \***

### **Ph.D. Biological Sciences: Zoology**

B.S., University of Arizona, 2000. M.S., University of Arizona, 2003

### **Thesis: The Seasonality of Reproduction, Body Composition, and Energy Expenditure in Northern Red-Backed Voles (*Myodes rutilus*)**

This project studied the effects of season on the northern red-backed vole (*Myodes rutilus*), an Alaska rodent known to have bred in winter. Its body composition, organ masses and field metabolic rate changed seasonally, and intraspecific variation in its reproductive response to photoperiod is regulated at the pituitary or hypothalamic level.

Major Professors: Dr. Ian van Tets and Dr. Abel Bult-Ito

## **Brentha Thurairajah \*\***

### **Ph.D. Atmospheric Sciences**

B.E., University of Madras (India), 2001. M.S., Montana State University, 2004

### **Thesis: Role of Waves on the Circulation of the Arctic Middle Atmosphere: Rayleigh Lidar Measurements and Analysis**

Rayleigh lidar measurements have provided high-resolution temperature and density profiles of the stratosphere and mesosphere (~40-80 km) over Poker Flat Research Range, Chatanika, Alaska (65°N, 147°W). Using these measurements, the thermal structure of the stratosphere and mesosphere was documented and the role of small-scale gravity waves on the large scale meridional circulation was analyzed.

Major Professor: Dr. Richard L. Collins

## **Elizabeth Veenstra \*\***

### **Ph.D. Geophysics**

B.S., Wayne State University (Michigan), 1993. M.S., University of Michigan - Ann Arbor, 1996

### **Thesis: Crustal Thickness Variation in South Central Alaska: Results from Broadband Experiment Across the Alaska Range**

Receiver function analysis of teleseismic waveforms reveal thin, less dense crust north of the Alaska Range (~26 km; 2700 kg/m<sup>3</sup>), thicker crust beneath the mountains (~35-45 km; 2830 kg/m<sup>3</sup>), sufficient root to isostatically support the topography, and evidence that the Denali and Hines Creek faults extend through the entire crust.

Major Professor: Dr. Douglas H. Christensen



# SCHOOL OF EDUCATION

*Dr. Eric C. Madsen, Dean*

## **Gail Kazuko Kawakami-Schwarber**

### **Ph.D. Counselor Education: Interdisciplinary Program**

B.A., University of British Columbia (Canada), 1993. M.A., Alaska Pacific University, 2002

### **Thesis: Protective Factors Promoting Psychosocial Resilience in Biracial Youths**

This research conducted in Alaska explored psychosocial resilience in the rapidly growing biracial youth population. Specific protective factors promoting a healthy biracial identity development and resolution were identified. Results from this cutting-edge research may be integrated into appropriate prevention and intervention techniques for application by counselors, educators and parents.

Major Professor: Dr. Allan A. Morotti

## **Roy F. Roehl II**

### **Ph.D. Education and Mathematics Standardized Test Scores: Interdisciplinary Program**

B.Ed., University of Alaska Fairbanks, 1993. M.Ed., University of Alaska Fairbanks, 1996

### **Thesis: Correlation Between Teacher Turnover Rates in the State of Alaska and Standardized Test Scores in the Area of Mathematics on the Standards Based Assessment/High School Qualifying Exam**

This study utilized bivariate correlations, partial correlations, multivariate analysis including Hotelling-T, and observed power to investigate the possible correlations and connections of teacher turnover in Alaska's public school system to performance on the standards-based assessment of the Alaska High School Qualifying Exam.

Major Professor: Dr. Bryan Brayboy

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\* Summer degree recipient

\*\* December degree recipient



# SCHOOL OF FISHERIES AND OCEAN SCIENCES

*Dr. Denis Wiesenburg, Dean*

## **David C. Caroffino \***

### **Ph.D. Fisheries**

*B.S., Lake Superior State University (Michigan), 2004. M.S., University of Minnesota - Twin Cities, 2006*

#### **Thesis: Early Life History Dynamics of Lake Sturgeon**

After historic population reductions, lake sturgeon (*Acipenser fulvescens*) restoration in the Laurentian Great Lakes would benefit from a better understanding of its early life history. Mortality, predation and movement were examined within a recruitment context. These results will promote better monitoring and management strategies for this, the region's largest species.

**Major Professor: Dr. Trent M. Sutton**

## **Markus A. Janout \*\***

### **Ph.D. Oceanography**

*B.S., University of Hamburg (Germany), 2003*

#### **Thesis: Heat and Freshwater Controlling Processes on the Northern Gulf of Alaska Shelf**

Processes were investigated that control the variability of temperature and salinity on the northern Gulf of Alaska shelf in order to improve the understanding of the physical environment of this rich ecosystem. Important processes include large shelfbreak eddies, atmospheric pressure systems, and dynamics involving the Alaska Coastal Current.

**Major Professor: Dr. Thomas J. Weingartner**

## **Haixue Shen \*\***

### **Ph.D. Fisheries**

*B.A., Ocean University of China, 1997. M.S., Ocean University of China, 2000*

#### **Thesis: Walleye Pollock (*Thegra chalcogramma*) Distribution in the Eastern Bering Sea Related to Fishery and Environmental Factors**

This thesis examined walleye pollock distribution in the eastern Bering Sea related to the fishery and physical environment at different temporal and spatial scales using fisheries acoustic data and observer data in the winter fishing season during 2002 – 2006.

**Major Professor: Dr. Terrance J. Quinn II**



# SCHOOL OF NATURAL RESOURCES AND AGRICULTURAL SCIENCES

*Dr. Carol E. Lewis, Dean*

## **Chanda Leah Meek \***

### **Ph.D. Natural Resources and Sustainability**

*B.S., Western Washington University, 1996. M.S., York University (Canada), 1999*

### **Thesis: Comparing Marine Mammal Co-Management Regimes in Alaska: Three Aspects of Institutional Performance**

This study compares the policy implementation process for managing bowhead whale and polar bear subsistence hunting in Alaska, focusing on how and why agency approaches to conservation differ. The analysis centers on three aspects of institutional performance that drive policy outcomes: historical events, organizational culture and relationships with stakeholders.

**Major Professor: Dr. Gary P. Kofinas**

## **Martha K. Raynolds \***

### **Ph.D. Geobotany: Interdisciplinary Program**

*B.A., Dartmouth College (New Hampshire), 1978. M.S., Virginia Polytech State University, 1980*

### **Thesis: A Geobotanical Analysis of Circumpolar Arctic Vegetation, Climate, and Substrate**

Analysis of the circumpolar Arctic vegetation map (CAVM) with circumpolar data sets of a satellite vegetation index (NDVI) and environmental characteristics showed the importance of summer temperatures and landscape age in controlling the distribution of arctic vegetation. Results include maps and tables including original GIS layers of environmental characteristics ([www.arcticatlas.org](http://www.arcticatlas.org)).

**Major Professors: Dr. David L. Verblya and Dr. Donald A. Walker**

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\* Summer degree recipient

\*\* December degree recipient