PROGRAM REVIEW 2010
School of Natural Resources and Agricultural Sciences
B.S. and B.A. in Geography

1. A current outcomes assessment plan and summary for the B.S. and B.A. in Geography in the School of Natural Resources and Agricultural Sciences (SNRAS) is attached.

2a. For the time period 2008-2018, the state of Alaska Department of Labor projects 551 job openings for which geographers qualify. In the fields of environmental science/conservation/life scientists and technicians, there are expected to be 478 job openings representing approximately 40% of the current workforce. An additional 73 potential positions are estimated to be available over the next 10 years for natural science managers, representing 9% of the workforce including replacements. The state does not include the field of Geographic Information Systems, a skill for which demand is growing rapidly, and which is prominent in two of the Geography B.S. options. At the most recent Natural Resources and Fisheries Job Fair held at UAF, every state and federal resources agency identified GIS as one of the most important job skills for new hires.

2b. Unique and significant service activities of faculty in the undergraduate geography degree programs center on service and outreach to school districts around Alaska, and to youth and adults in the local community. A list is attached. As examples, two faculty are teaching and developing 100-level SNRAS courses for college credit at a local school, others support school districts in villages and mentor teachers and principals in applying the latest geospatial technology in the classroom. Math in a Cultural Context delivers mathematics curricula focused on cultural content in grades K-6 throughout Alaska. Geography faculty also serve as editors and guest editors for journals and atlases, and directors or coordinators of major grant-funded programs within SNRAS.

2c. The University of Alaska Geography Program (UAGP) was developed as a statewide program to deliver a Geography B.S. and B.A. at UAF, UAA and UAS using the strengths of individual campuses in focused areas. It currently offers the Geography B.S. and B.A. at UAF and UAS. Through cross-campus exchange, students benefit from UA's diverse faculty expertise and Alaska's diverse environments. UAA opted out of the UAGP and in 2009 developed the Environment and Society B.A. and B.S. degrees. The UAA degrees share similar coursework with the UAF and UAS degrees, but are not integrated into a geography disciplinary framework, and do not focus on landscape change, climate change, geospatial techniques, and specific regions, as do the UAF and UAS degrees. The UAGP stands out on a national scale. Its location allows unique access to world-class climate-change expertise and a natural outdoor Arctic climate-change laboratory. Cutting-edge geospatial and geovisualization resources (GIS, satellite data, Neogeography/Google Earth) are available to students exclusively at UAF through the UAGP.

2d. Starting in spring 2006 and continuing through the 2007-2008 academic year, faculty undertook major revisions in the Geography undergraduate program. In the 2008-2009 academic year, the revisions to the B.A. took effect. According to SNRAS information, the number of majors increased from 21 in 2007-2008 to approximately 26 by May 2009, contrary to data presented by PAIR that shows number of majors flat for AY07 through AY09. The revised B.A. is still in its development stage and is attracting new and higher-quality majors. Program adjustments have been made and new courses have been created during this development stage to accommodate increasing enrollments and meet changing student demand. The B.S. degree was also substantially revised beginning in the spring of 2006 at the same time the UAGP was proposed as a state-wide Geography program. Two new B.S. options were created to emphasize

climate change, GIS, and geographic analysis. The existing B.S. degree (Environmental Studies) is now one of three B.S. options, though the PAIR data show it as a separate degree. SNRAS data indicate that there were approximately 10 B.S. majors in 2007-2008 and approximately 30 by May 2009. This differs from PAIR data, which indicates there were 25 B.S. majors in AY07 and 31 in AY09. Overall, Geography B.S. and B.A. majors increased from 50 in AY07 to 61 in AY10 or 20%. The upper division credit hours delivered by Geography faculty has shown an increase of 34%, and Geography has begun to offer professional courses in keeping with its goal of increasing the presence of Geography in curricula in school districts throughout Alaska.

The Agricultural and Forestry Experiment Station (AFES) is a part of SNRAS. Budgets for the unit are recorded for the AFES as one entity and SNRAS as another. The SNRAS budget is not recorded by department. Tuition is not generated by AFES. We do not currently account for our tuition by upper and lower division, graduate, and outside and professional courses. Grants and contracts are for both research and instruction. Only one tenure-line Geography faculty holds a joint appointment with AFES. The date PAIR data is pulled will affect the FTEs for faculty and staff because at any given time, a different proportion of salaries will be charged to federal formula funds, grant, contract, or state funds. The AFES receives federal formula funds for research in agriculture and forestry. Faculty with joint appointments in AFES all receive these funds for approved projects and they must be matched 1:1 with state dollars. Most also receive grant and/or contract funding. A more useful way to report FTEs for SNRAS faculty would be to use workload allocations. Budget data provided show only AFES (not instruction) and SNRAS. We do not currently have information that breaks our budgets down on a course by course basis. We would need information at this level to report budget by department because Geography and Natural Resource Management courses are used across degree programs within SNRAS. Note that, with two exceptions, tenure-track Geography faculty do not have heavy research workload assignments. On average, teaching assignments predominate, exceeding 70%, and adjuncts are used frequently to deliver courses. If Geography budget were broken out, it would most likely reflect closely the cost of delivering and administering courses. Attached tables show names of affiliated regular faculty for the Geography B.S. and B.A. degree programs and grants and contracts for those faculty.

2e. Attached tables provide 2007 and 2008 publications for Geography faculty and staff from the 2009-2010 and 2010-2011 Annual Unit Plan for SNRAS and AFES. As stated above, tenure-track faculty in Geography, with two exceptions, do not have heavy research workload assignments. On average, geographers hold workload appointments 30% or less in research, with the remainder split between teaching, outreach, and service.

2f. The Geography program has established, and continues to develop, thriving partnerships focused on providing geography education to teachers and students in school districts around Alaska. The aim is to promote quality geography education in the schools, build positive long-term relationships between UAF and the K-12 school system, and to build awareness of SNRAS degree programs among potential future college students. A productive partnership with the Geography Alliance has enabled Geography faculty and staff to travel the state with the 'Giant Map,' which is in high demand at elementary schools. The Google Earth partnership delivers tools and training to teachers for using Google teaching tools in their classrooms, with hands on experience provided by Google staff, and UAF faculty and staff. The Cooperative Ecosystems Studies Unit (CESU) offers opportunities for new researchers as well as more experienced, to participate in cooperative agreements with more than 15 state and federal agencies.

2g. There are no specialized programs in the Geography B.A. or B.S. options.

UNIVERSITY OF ALASKA FAIRBANKS

Student Learning Outcomes Assessment Plan

B.A. and B.S., Geography

School of Natural Resources and Agricultural Sciences

MISSION STATEMENT: The School of Natural Resources and Agricultural Sciences is committed to providing quality education through close student-faculty relationships, development of critical-thinking and decision-making skills, student participation in research and other scholarly activities, and recognizing students' individual interests and needs.

GOAL STATEMENT: Geography majors will become professionals with expertise and skills in physical and human geography, geospatial sciences, and related fields. They will be enabled to investigate, describe, explain, and interpret the physical and human characteristics of the earth, with particular focus on the northern and Pacific Rim regions. This will prepare them to make professional contributions in the areas of geographic research, education, civil service, foreign service, resource management, tourism, and many other academic and applied fields.

Intended Outcomes	Criteria & Procedures	Implementation (what, when, who)
Graduates will: • Be able to synthesize knowledge and apply critical-thinking skills to thoroughly understand all the dimensions of a given problem. • Be able to develop meaningful solutions to a problem that take multiple environmental, political, economic, and cultural factors into consideration. • Have reached a cognitive and personal development level that enables responsible decision-making relating to geographical problems. • Be able, orally or in writing, to effectively articulate a problem or scenario, explain its underlying causes, and communicate proposed solutions and the reasoning behind them.	**Establish a structure to assess:** • Student's understanding of concepts and processes in the areas of both physical and human geography. • Student's knowledge of the physical, political, economic, and cultural characteristics of the earth. • Student's ability to think independently, solve problems, and communicate both orally and in writing.	**1. Pre- and post- assessment of geographic knowledge:** • Each new geography student will complete a knowledge-based questionnaire administered in introductory courses such as GEOG 101 and GEOG 111x, to establish baseline data on knowledge of geography. Transfer students will be given the questionnaire by their advisor. • In their last semester, each geography major will complete another knowledge-based questionnaire (administered by their advisor), and the results compared to those of the baseline questionnaire to evaluate the relative knowledge gained from beginning to end of the student's course of study. **2. Evaluation of oral & written communication and research skills:** • Each student's research and communication skills will be evaluated in GEOG 490, the Senior Seminar, a course required for all geography majors, and generally taken in a student's last year. The instructor will fill out a standard written form evaluating each student's research skills and oral & written communication skills. • For each geography major, standard forms evaluating research skills, oral communication skills, and/or writing skills in the following courses will be filled out and kept on file: GEOG 312, GEOG 339, GEOG 489 • Depending on the sequence in which a student takes GEOG 312, 339, 489, and 490, improvement in their oral and written communication skills will be tracked over time.
	Assess needs for adjustments in program	1. An anonymous Senior Exit Survey will be administered to each graduating senior by his or her advisor. 2. Dean or associate dean will do exit interviews with graduating seniors near the end of each semester. 3. Alumni survey of recent graduates conducted every five years. 4. An employer survey conducted every five years.

Outcomes Assessment Implementation Summary

School of Natural Resources and Agricultural Sciences

Program: B.A. Geography

	Academic Year		
	2007-08	**2008-09**	**2009-2010**
Assessment information collected	1) Faculty carried out a complete review of the Geography B.A. degree beginning in Spring 2006, and continuing through the 2007-2008 academic year. This included consultation with faculty at UAA and UAS to assess the potential for a statewide geography program. 2) Dean administers exit interview with graduating students.	1) Major revisions to the B.A. took effect. Because of revisions to both the program and the content & structure of individual courses, conventional outcomes information was not consistently collected. 2) Informal feedback from students on the program and course changes was generally positive. 3) The number of Geography B.A. majors increased from approximately 21 in 07/08 to approximately 26 by May 2009. 4) Dean administers exit interview with graduating students.	1) Evaluate student writing skills, oral presentation skills, and geographical analysis skills based on evaluations of written and oral work selected both from early coursework and from later upper-division courses, especially Senior Seminar (GEOG 490). 3) Seven Geography B.A. majors graduated in the 08/09 academic year, and several new majors signed-up, resulting in a net increase of two B.A. majors by May 2010. 4) Dean administers exit interview with graduating students. 5) Began an informal survey of alumni to assess graduates' success in finding degree-related employment or placement in relevant graduate programs.

B.A. Geography

	2007-08	2008-09	2009-2010
Conclusions drawn from the information collected above	1) The UAF Geography faculty concluded that the Geography B.A. was in need of major revision to better prepare students to meet the needs of the contemporary job market. 2) Faculty at UAF, UAA, and UAS concluded that combining geography expertise and resources at UAF, UAA, and UAS could create a statewide geography and environmental studies program that would be stronger, and would better serve students, than any of the individual campus programs standing alone.	1) The revised B.A. is a definite improvement, is moving the program in a positive direction, and is attracting more and higher-quality majors. 2) The B.A. is in it's shakedown cruise, and still needs refinement. 3) Course offering frequency and sequencing need to be adjusted to meet changing student demand.	1) Almost all students show improvement in their writing, oral, and geographical analysis skills between their early courses and the later courses in their program. However, the improvement is uneven, contingent partly on variability in individual students' ability and motivation, but also on the foundation skills that they have when they enter the program, which are extremely variable. 1) The revised B.A. continues to attract more and higher-quality majors than its predecessor.
Curricular changes resulting from conclusions drawn above	1) The UAF geography B.A. was completely revised in coordination with UAA and UAS. New courses were created, existing courses were revised and updated, and a set of "Foundation" courses, required of every geography major, was agreed-upon by faculty at the three campuses. The curricular changes took effect Fall 2008.	1) Minor changes were made to the B.A. curriculum to accommodate increased enrollments, and to further refine the revised degree.	1) Encourage faculty to incorporate writing, speaking, and analysis exercises in both lower and upper division courses, so that students deficient in these skills have every opportunity to improve. 2) Build early evaluations of foundation skills into courses to identify as early as possible students who will need additional help, or who are not well-enough prepared to succeed in a given course.

Outcomes Assessment Implementation Summary
School of Natural Resources and Agricultural Sciences

Program: B.S. Geography

	Academic Year		
	2007-08	**2008-09**	**2009-10**
Assessment information collected	1) Faculty carried out a complete review of the Geography B.S. degree beginning in Spring 2006, and continuing through the 2007-2008 academic year. This included consultation with faculty at UAA and UAS to assess the potential for a statewide geography program.	1) Major revisions to the B.S. took effect. Because of revisions to both the program and the content & structure of individual courses, conventional outcomes information was not consistently collected. 2) Informal feedback from students on the program and course changes was extremely positive. 3) The number of Geography B.S. majors increased dramatically from approximately 10 in 07/08 to approximately 30 by May 2009. 4) Most of the new B.S. majors signed-up for one of the two new B.S. options.	1) Evaluate student writing skills, oral presentation skills, and geographical analysis skills based on evaluations of written and oral work selected both from early coursework and from later upper-division courses, especially Senior Seminar (GEOG 490). 3) Four Geography B.S. majors graduated in the 08/09 academic year, and several new majors signed-up, resulting in a net increase of five B.S. majors by May 2010. 4) Dean administers exit interview with graduating students. 5) Began an informal survey of alumni to assess graduates' success in finding degree-related employment or placement in relevant graduate programs.

B.S. Geography

	2007-08	2008-09	2009-10
Conclusions drawn from the information collected above	1) The UAF Geography faculty concluded that the Geography B.S. was in need of major revision to better prepare students to meet the needs of the contemporary job market. 2) Faculty at UAF, UAA, and UAS concluded that combining geography expertise and resources at UAF, UAA, and UAS could create a statewide geography and environmental studies program that would be stronger, and would better serve students, than any of the individual campus programs standing alone.	1) The revised B.S. is a definite improvement, is moving the program in a positive direction, and is attracting new and higher-quality majors. 2) The new B.S. options in "Landscape Analysis and Climate Change," and "Geographic Information Science and Technology" clearly fill a need for students. 3) The relatively low increase in new majors in the original B.S. option, "Environmental Studies," indicates that this option needs improvement. 4) The new and revised B.S. options are still in their shakedown cruise, and still need refinement. 5) Course offering frequency and sequencing need to be adjusted to meet changing student demand.	1) Almost all students show improvement in their writing, oral, and geographical analysis skills between their early courses and the later courses in their program. However, the improvement is uneven, contingent partly on variability in individual students' ability and motivation, but also on the foundation skills that they have when they enter the program, which are extremely variable. 1) The revised B.S. and new B.S. options continue to attract more and higher-quality majors than their predecessor.

B.S. Geography

	2007-08	2008-09	2009-10
Curricular changes resulting from conclusions drawn above	1) The UAF geography B.S. was completely revised in coordination with UAA and UAS. New courses were created, existing courses were revised and updated, and a set of "Foundation" courses, required of every geography major, was agreed-upon by faculty at the three campuses. 2) Two new options were added within the Geography B.S.: "Landscape Analysis and Climate Change," and "Geographic Information Science and Technology." These options were created to meet growing interest among students in these areas, and to help graduates take advantage of present and future job growth in these fields. The curricular changes took effect Fall 2008.	1) Minor changes were made to the B.S. curriculum to accommodate increased enrollments, and to further refine the revised degree. 2) Faculty began a review of the "Environmental Studies" option.	1) Encourage faculty to incorporate writing, speaking, and analysis exercises in both lower and upper division courses, so that students deficient in these skills have every opportunity to improve. 2) Build early evaluations of foundation skills into courses to identify as early as possible students who will need additional help, or who are not well-enough prepared to succeed in a given course. 3) UAF and UAS geography faculty are coordinating on a revision of the "Environmental Studies" option within the Geography B.S. degree to make it more academically rigorous, and to make it more relevant to current and developing environmental issues.

School of Natural Resources and Agricultural Sciences
Agricultural and Forestry Experiment Station

Unique and Significant Service: Geography

- Implement college geography courses taught to high school students.
- Teach GEOG 101 Expedition Earth: Introduction to Geography at Effie Cochran School in Fairbanks.
- Develop GEOG 111 Earth Systems: Elements of Physical Geography for high school offering.
- Guest Editor for special issues of *Computers and Geoscience.*
- Support school districts in villages and mentor teachers and principals in applying the latest geospatial technology in the classroom.
- Math in a Cultural Context delivers mathematics curricula focused on cultural content in grades K-6 throughout Alaska.
- Regional Editor for Circumpolar Atlas team, Electronic Cultural Atlas Initiative (ECAI).
- Director, Scenarios Network for Alaska and Arctic Planning (SNAP).
- Director/Coordinator, Alaska GLOBE program.
- Coordinator for Alaska Global Change Education, Alaska Earth System Education Alliance & OLCG/Global Change Education.

Joint Partnerships
Geography

Partners	Project	Funding Source	2008	2009	2010
National Geographic	Geography Alliance – K-12 Outreach	National Geographic	X	X	X
AT&T	IT outreach to K-12	AT&T, foundations	X	X	X
GoogleEarth	Landscape analysis applications in K-12	GoogleEarth	X	X	X
UAS,USFS, Pacific Northwest Research Station & National Forest System Alaska Region, USFish & Wildlife Service Alaska Region & City & Borough of Juneau		State of Alaska			
	Alaska Coastal Rainforest Cer				X
Cooperative Ecosystems Study Unit	Ecosystems Management	NPS,BLM,NRCS,US F&W,ARS	X	X	X

Grant Proposals FY10
Geography

512940		AFES	Geography	Bailey, John		Google Earth Explorations			NSF	\g6735		D6AFES		58213
S00011653		AFES	Geography	Fresco, Nancy L	1	Temperature Monitoring Network for Alaska	40162	40298	Cook Inlet Keeper	G00006342	40254	D6AFES	1	10
S00013222		AFES	Geography	Fresco, Nancy L		Yukon Climate Projections	40162	40527	Yukon College - Northern Research Institute	G00006147	40185	D6AFES	1	6.236
S00013838		AFES	Geography	Fresco, Nancy L		Canadian Biome Shift Analysis	40330	40694	The Nature Conservancy	G00006309	40259	D6AFES	1	93
S00014037		AFES	Geography	Fresco, Nancy L		Alaska Biome Shift	40268	40816	US Fish & Wildlife Service	G00006444	40312	D6AFES	1	190
	13443	AFES	Geography	Lipka		Power of Symmetry				G6176				
	14164	AFES	Geography	Lipka		Indigenous Ways Workshop								
S00012247		AFES	Geography	Stephens, Sidney A	1	MapTEACH: Mapping Technology Experienc	40057	41152	U S DEPARTMENT OF EDUCATION	G00005957	40079	D6AFES	1	603.415
S00012608		AFES	Geography	Sfraga, Mike	1	Developing a Joint Research Program within	40057	41273	Forest Service	141947	40051	D6AFES	1	40
S00012739		AFES	Geography	Sfraga, Mike		AGA Restructure	40057	40421	Nat'l Geographic Society	G00006017	40003	D6AFES	1	23
S00012729		AFES	Geography	Trainor, Sarah Fleisher	1	Wildland Fire Science Delivery and Outreach	40253	40359	Department of the Interior	G00006262	40254	D6AFES	1	144.885
S00012998		AFES	Geography	Trainor, Sarah Fleisher		Capacity Building in Climate Change Informa	40116	40482	Other Nonprofit Organizations	G00006108	40149	D6AFES	1	59.998

Grant Proposals FY 10
In Progress
Geography

S00013479	AFES	Trainor, Sarah F	1	Collaborative Research to Map Community Resilience: Synthesizing (	40405	41500	National Scie	(blank)	40183	D6AFES	1	257.783
S00013502	AFES	Veazey, David A	1	Career Pathways and Opportunities in Agriculture, Natural Resources	40360	40909	Cooperative S	(blank)	40185	D6AFES	1	15

SCHOOL OF NATURAL RESOURCES AND AGRICULTURAL SCIENCES
Geography – 2007 Publications

Journal/Publication	Title of article	Lead author (last name, first initial)	Co-author(s)	Publication Date
Environmental Management 39:783–805.	Geyser decline and extinction in New Zealand— energy development impacts and implications for environmental management.	Barrick KA		2007
Atmospheric Sciences Section of the American Geophysical Union (AGU AS) Newsletter Vol.1, Issue 6, page 4.	Environmental Studies in the Boreal Forest Zone: Summer Institute in Russia.		Sparrow E	2007
Journal of Geophysical Research—Biogeosciences. 113, G01017, doi:10.1029/2007JG000407.	Monitoring start of season in Alaska with GLOBE, AVHRR and MODIS data.		Sparrow E	2007
The University of the Arctic Newsletter Shared Voices, Go North! Special Edition 2007:7. University of the Arctic International Secretariat. University of Lapland, Rovarniemi, Lapland.	GLOBE Program Makes IPY Relevant to Students Around the World.	Sparrow E		2007
Eos Trans. AGU, 87(54), Fall Meet. Suppl., Abstract ED11A-0120.	Opportunities for IPY Higher Education and Outreach.	Sparrow E		2007
Eos Trans. AGU, 87(54), Fall Meet. Suppl., Abstract GC22A-01.	Environmental Studies in the Boreal Forest Zone: Summer IPY Institute at Central Boreal Forest Reserve, Fedorovskoe, Tver area, Russia	Sparrow E		2007
Geophysical Research Abstracts, Vol. 9, 05828. SRef-ID 1607-7962/EGU2007- A-05828. European Geosciences Union.	GLOBE seasons and biomes: an international IPY Earth science project.	Sparrow E		2007

Proceedings of the International Symposium on Asian Collaboration in the International Polar Year 2007–2008: 89–92, held in Tokyo, Japan, organized by IPY National Committee, Science Council of Japan and the National Institute of Polar Research.	Climate change research by pre-college students in the International Polar Year. 2007.	Sparrow E	Kopplin M Verbyla DL	2007
Proceedings of the Seventh International Conference on Global Change: Connection to the Arctic (GCCA7): 19–20.	Engaging Pre-college Students in the International Polar Year Through Earth System Science Research and Education.	Sparrow E	Kopplin M Verbyla DL	2007
Proceedings of the Earth from Space: The Most Effective Solution Third International Conference held Dec.4–6, 2007 in Moscow, Russia, p. 281.	Use of Remotely Sensed Data in Earth System Science Education and Research for Precollege Students.	Sparrow E		2007

Reference Type: Journal Article
Record Number: 40
Author: P. W. Webley, K. Dean, **Bailey J.E.**, J. Dehn and R. Peterson
Year: 2008
Title: Automated forecasting of volcanic ash dispersion utilizing Virtual Globes
Journal: Natural Hazards
Volume: 51
Issue: 2
Pages: 345-361
Short Title: Automated forecasting of volcanic ash dispersion utilizing Virtual Globes
DOI: 10.1007/s11069-008-9246-2

Reference Type: Journal Article
Record Number: 44
Author: E. J. Kolb, **Bailey J.E.**, A. Bishop, J. Cain, M. Goddard, K. Hurowitz, K. Kennedy, T. Ornduff, M. Sfraga and J. Wernecke
Year: 2008
Title: KML-based teaching lessons developed by Google in partnership with the University of Alaska
Journal: EOS Trans
Volume: 89
Issue: 53
Type of Article: Fall Meeting Supplement Abstract IN41B-1146
Short Title: KML-based teaching lessons developed by Google in partnership with the University of Alaska

Reference Type: Journal Article
Record Number: 45
Author: D. J. Schneider, **Bailey J.E.** and J. Dehn
Year: 2008
Title: Satellite-based detection and tracking of volcanic ash clouds from the 2008 eruptions of Okmok and Kasatochi volcanoes, Alaska.
Journal: EOS Trans
Volume: AGU
Issue: 89
Pages: 53
Type of Article: Fall Meeting Supplement Abstract A51J-06
Short Title: Satellite-based detection and tracking of volcanic ash clouds from the 2008 eruptions of Okmok and Kasatochi volcanoes, Alaska.

Reference Type: Film or Broadcast
Record Number: 27
Director: W. Schneider and S. Stephens
Year Released: 2008
Title: Interview with Charlie Campbell, Ruth Althoff and Lester Erhart,

Medium: University of Alaska, Rasmuson Library, Oral History Archive Tape
Short Title: Interview with Charlie Campbell, Ruth Althoff and Lester Erhart,

Reference Type: Journal Article
Record Number: 26
Author: D. Stevens, **S. Stephens**, P. Burns, S. Batzli and T. Olson
Year: 2008
Title: MapTEACH: Place-based geospatial learning and applications in Alaska
Journal: InstantPublisher, Collerville, Tennessee
Pages: 405
Short Title: MapTEACH: Place-based geospatial learning and applications in Alaska
URL: http://itestlrc.edc.org/mapteach-place-based-geospatial-learning-and-applications-rural-alaska

Reference Type: Journal Article
Record Number: 47
Author: S. F. Trainor
Year: 2008
Title: Finding Common Ground: Moral Values and Cultural Identity in Early Conflict Over the Grand Staircase-Escalante National Monument
Journal: Journal of Land, Resources, and Environmental Law
Volume: 28
Issue: 2
Pages: 331-359
Short Title: Finding Common Ground: Moral Values and Cultural Identity in Early Conflict Over the Grand Staircase-Escalante National Monument

Reference Type: Journal Article
Record Number: 49
Author: S. F. Trainor, F. S. Chapin III, D. McGuire, M. Calef, **N. Fresco**, M. Kwart, P. Duffy, A. L. Lovecraft, **T. S. Rupp**, L. DeWilde, O. Huntington and D. D. Natcher
Year: 2008
Title: Vulnerability and Adaptation to Climate-Related Fire Impacts in Rural and Urban Interior Alaska
Journal: American Association for the Advancement of Science Arctic Science, Arctic Science Division
Date: September 17, 2008
Short Title: Vulnerability and Adaptation to Climate-Related Fire Impacts in Rural and Urban Interior Alaska

Reference Type: Government Document
Record Number: 87
Author: S. F. Trainor, G. Yu and J. Walsh
Year: 2008
Title: Towards Predicting the Impact of Climate Change on Tourism: An Efficient Tourism Climate Index.

Reference Type: Journal Article
Record Number: 40
Author: P. W. Webley, K. Dean, **Bailey J.E.**, J. Dehn and R. Peterson
Year: 2008
Title: Automated forecasting of volcanic ash dispersion utilizing Virtual Globes
Journal: Natural Hazards
Volume: 51
Issue: 2
Pages: 345-361
Short Title: Automated forecasting of volcanic ash dispersion utilizing Virtual Globes
DOI: 10.1007/s11069-008-9246-2
Reference Type: Journal Article
Record Number: 48
Author: F. S. Chapin III., **S. F. Trainor**, O. Huntington, A. L. Lovecraft, E. Zavaleta, D. C. Natcher, D. McGuire, J. Nelson, L. Ray, M. Calef, **N. Fresco**, H. Huntington, **T. S. Rupp**, L. DeWilde and R. Naylor
Year: 2008
Title: Increasing Wildfire in Alaska's Boreal Forest: Causes, Consequences, and Pathways to Potential Solutions of a Wicked Problem
Journal: Biosciences
Volume: 58
Pages: 531-540
Short Title: Increasing Wildfire in Alaska's Boreal Forest: Causes, Consequences, and Pathways to Potential Solutions of a Wicked Problem

Reference Type: Journal Article
Record Number: 89
Author: N. Fresco and **T. R. Scott**
Year: 2008
Title: SNAP Preliminary Report to the Governor’s Sub-Cabinet on Climate Change.
Journal: Agricultural and Forestry Experiment Station Miscellaneous Publication
Issue: MP 2008-06
Pages: 24
Short Title: SNAP Preliminary Report to the Governor’s Sub-Cabinet on Climate Change.

Reference Type: Journal Article
Record Number: 57
Author: T. A. Kurkowski, **D. H. Mann**, **T. S. Rupp** and **D. L. Verbyla**
Year: 2008
Title: Relative importance of different successional pathways in an Alaskan boreal forest.
Journal: Canadian Journal of Forest Research
Volume: 38
Issue: 1911-1923

Short Title: Relative importance of different successional pathways in an Alaskan boreal forest.

Reference Type: Journal Article
Record Number: 32
Author: T. A. Kurkowski, **D. H. Mann**, **T. S. Rupp** and **D. L. Verbyla**
Year: 2008.
Title: Relative importance of different secondary successional pathways in an Alaskan boreal forest.
Journal: Canadian Journal of Forest Research.
Volume: 38
Pages: 1911-1923.
Short Title: Relative importance of different secondary successional pathways in an Alaskan boreal forest.