

**Syllabus for 2018 UAF Summer Sessions Special Topic course,
BIOL 695, Arctic Alaska Vegetation
14 Jun – 30 Jun 2018**

1. Course information

Title: Special Topic, Arctic Alaska Vegetation

Number: BIOL 695

Credits: 3

Prerequisites: BIOL 115 & 116, or equivalent introductory physical science course intended for science majors in biology, geology or geography or instructor approval

Location: Murie Building, Room 330

Meeting time: 14 Jun, 9:00 am

2. Instructors and contact information

Prof. D.A. (Skip) Walker, (instructor and course leader, dawalker@alaska.edu). Research Prof. Amy Breen (instructor and co-course leader, has Wilderness First Responder Training), albreen@alaska.edu, International Arctic Research Center and Alaska Geobotany Center, Room 252 in Arctic Health Research Building; Shawnee Gowan (teaching assistant, sagowan@alaska.edu)

3. Course readings/materials:

Readings (see daily readings in the course schedule):

Daily readings: Each day 1-2 papers are required readings that we will discuss over breakfast and/or dinner. The required readings are in the “Syllabus and Course Reader”. One student will be selected randomly each day to help instructors lead discussions.

Course library: The course also carries a book box with many other general references, relevant papers and books. Students can check these out for personal reading and as background for their course projects. The contents of the library are listed in the course “Syllabus and readings”.

Good general references: These references provide a good overview of the Dalton Highway and research at the Toolik Field Station.

1. Brown J, Kreig RA. 1983. *Guidebook to permafrost and related features along the Elliot and Dalton highways, Fox to Prudhoe Bay, Alaska*. Fairbanks, AK: Division of Geological and Geophysical Surveys.
2. Huryn A and Hobbie J. 2013. *Land of Extremes: a natural history of the Arctic North Slope of Alaska*. University of Alaska Press, Fairbanks.
3. Walker DA, Hamilton TD, Ping C-L, Daanen RP, Streever WW. 2009. *Dalton Highway Field Trip Guide for the Ninth International Conference on Permafrost*. Fairbanks, AK: Division of Geological and Geophysical Surveys.
4. Hobbie, J. and Kling, G. 2014. *Alaska's Changing Arctic*. Oxford, New York.

Course equipment

The course will provide a large group meeting and eating tent, Coleman stoves, water purification, first aid kit, satellite phone, generator, and vehicles. Students will need to purchase food and have money for meals at Coldfoot and Prudhoe Bay. Students will need to enroll early and contact the organizers to get a list of required equipment including: tent, sleeping bag, sleeping pad, rain gear, footwear, sun protection, bug protection, personal gear and other camping equipment. For students traveling from abroad or that do not own extreme weather gear, tents, sleeping bags and sleeping pads are available from the course instructors or can be rented from UAF's Outdoor Adventures.

4. Course description:

Course catalog description:

BIOL F695_ Arctic Alaska Vegetation: Brooks Range and North Slope. 3 Credits. Offered Summer 2018

17-day course. Includes 14-day field excursion along the Dalton Highway, Brooks Range, Arctic Foothills Arctic Coastal Plain, Prudhoe Bay. Climate, geology, permafrost, soils, vegetation, wildlife, local people, infrastructure impacts. Special fees apply. Stacked with BIOL F495(3)

More detailed description: This course will consist of:

1. 2 days of preparation with lectures, local field trips in the Fairbanks area and logistics for the excursion.
2. 13 days for the field excursion
3. 2 days of student presentations and local field trip at the end.

The trip will have a strong emphasis on Arctic environments, vegetation, and field sampling.

5. Course goals

The goals for the course are to: (1) Provide students with an in-depth field experience of Arctic environments, flora, and vegetation. (2) Provide methods of field sampling of Arctic vegetation, soils, and permafrost in a variety of Arctic ecosystems. (3) Focus on vegetation and environments in the Brooks Range and areas north, including Atigun Pass, Galbraith Lake, Toolik Lake, Innvait Creek, Happy Valley, Sagwon, and Prudhoe Bay.

6. Learning outcomes for graduate students

Undergraduate and graduate students should gain the following:

- a) Ability to recognize 160 common species of the boreal, alpine, and arctic regions of the forests and tundra regions of Alaska.
- b) Knowledge of the methods of vegetation sampling including plot sampling (Braun-Blanquet approach) and point sampling (line and quadrat sampling methods).
- c) Recognition and appreciation of vegetation as a key element of wildlife habitat and how to use knowledge of structure and composition of vegetation in assessing wildlife habitat.
- d) A basic understanding of permafrost, its distribution, characteristics, affects on distribution of plant communities, and vice versa.

- e) Knowledge of the linkages between plant community composition/ structure and key environmental factors, including toposequences, chronosequences, permafrost conditions, snow conditions, soil chemistry, bedrock geology, surficial geology, glacial history, and landscape age.
- f) Knowledge of how Arctic vegetation is changing in response to climate change and infrastructure related factors, such as increased summer warming, changing permafrost conditions, thermokarst, altered snow regimes, road dust, off-road vehicle trails, and road-related flooding.
- g) Insights into the history of the Prudhoe Bay oilfield, the Dalton Highway, and changes to life in a small Arctic village affected by the road.
- h) Overview of Arctic research conducted at the Toolik Field Station, Imnavait Creek, and other sites along the Dalton Highway.

In addition, graduate students should achieve the following:

- a) Application of the knowledge gained from the course to a topic appropriate to their graduate student studies.
- b) More in depth knowledge of the literature discussed during the course.
- c) Ability to collect plants in a manner appropriate for herbarium collections.

7. Instructional method

2-day preparation in Fairbanks:

Introductory lectures will give an overview of the course and Arctic ecosystems, permafrost and local people along the Dalton Highway. Students will develop a research topic to be examined during the excursion. On the second day students will visit local boreal forest ecosystems and the U.S. Army Cold Regions Research and Engineering Laboratory (CRREL) Permafrost Tunnel at Fox. Students should become familiar with the field guides (Walker et al. 2009, Brown & Krieg 1983, Huryn & Hobbie 2013) for the Dalton Highway route.

13-day field excursion:

The course will follow the route of the Dalton Highway. The course will examine Arctic environments, with in depth examination of the physical, biological, and human responses and adaptations to changing climate. We visit the old mining town of Wiseman to gain an understanding of village. We will establish camps in the Boreal Forest, Brooks Range, Arctic Foothills, and Arctic Coastal Plain — Coldfoot, Galbraith Lake, Happy Valley, and near Deadhorse — where we will camp and spend 2-4 days at each location learning the local vegetation, soils, permafrost, geology, and land-use and climate-change issues. The course will have field lectures, conducted during hikes to different areas, using materials from past and existing research projects in the region. Students will learn the methods of vegetation, soil, and permafrost sampling and collect sample data from representative ecosystems. The course includes visits to the Arctic Research Station at Toolik Lake and the oilfield at Prudhoe with an overview of the environmental research of the oil companies at Prudhoe Bay. We will then return to UAF driving south from Prudhoe Bay to Fairbanks.

2-days for student presentations in Fairbanks:

At the end of the course students will spend one day presenting oral presentations that summarize their observations during the excursion. Students will present their findings with ample time for group discussions.

Research topics:

All students will develop a research topic that fits with the planned excursion. The topics should focus on descriptive aspects of the Arctic environment with some element related to Arctic vegetation and environments along the Dalton Highway climate gradient. Students should keep in mind that the analysis of their data will be limited by the short time available at the end of the course. Upon our return to Fairbanks after the excursion, students will present 15-minute oral presentations summarizing aspects of their field observations, focusing on their research topic. Guidelines for these presentations will be handed out at the beginning of the course.

In addition, graduate students will also write a 10-15 page research paper focused on some aspect of observations during the course, which will be due 15 Jul 2018.

8. Course calendar

Date	Location	Activity	Reading to be done in preparation for each day
13 Jun	Fairbanks, Hess commons	Arrival, check into dorm	None
14-Jun	Fairbanks, Margaret Murie Bldg Room 330	9:00 am: Cold breakfast. Introductions. Talks: Overview of course, discussion of student projects. 12:00 noon: Lunch 1:00 pm: Risk assessment; health & safety, equipment check. 6:00 pm: (College Pizzeria), dinner. Night: UAF Dorms or elsewhere in Fairbanks	Start on: Marshall, R. 1991 (reprint). <i>Arctic Village: A 1930s Portrait of Wiseman, Alaska</i> , University of Alaska Press, Fairbanks, p. 3-44 Finish by breakfast 5 Jun.
15-Jun	Meet at Fairbanks Arctic Health Bldg. West Parking Lot	Breakfast: on own 9:00 am: Permafrost coring (Misha Kanevskiy), boreal forest plants (Amy Breen), meet at Arctic Health Bldg, West Parking Lot, travel together to coring sites. Lunch: To be determined. 1:00 pm: CRREL Permafrost Tunnel (Elliot Highway) (Yuri Shur & Misha Kanevskiy). Help pack trailer for trip. Get ready for next day. Evening: Dinner on own, Night: UAF Dorms or elsewhere in Fairbanks	Kanevskiy, M., et al. 2008. Late-Pleistocene syngenetic permafrost in the CRREL permafrost tunnel, Fox, Alaska. University of Alaska, Institute of Northern Engineering, Fairbanks, Alaska.
16-Jun	Meet at Fairbanks Arctic Health Bldg. West	Breakfast: Sourdough Sam's or Hilltop 6:30 am: Arctic Health West Parking Lot: Final packing, drive to breakfast. 8:00 am -12:00 noon: Drive to Yukon river, insect ecology (Derek Sikes) 12:00 noon: Lunch at Yukon River. 1:00 4:00 pm: Drive to Coldfoot with stop at Finger Mountain Dinner: at Coldfoot truck stop.	Chapin, F. S. et al. 2010. Resilience of Alaska's boreal forest to climatic change. Canadian Journal of Forest Research, 2010, 40(7): 1360-1370, 10.1139/X10-074

	Parking Lot	Night: Tent camp in Coldfoot vicinity	
17-Jun	Coldfoot vicinity	Breakfast in Coldfoot tent camp. AM: Wiseman, Jack Reakoff talk; PM: Heidi Schoppenhorst , Interagency Visitor Center. Dinner: Cook camp dinner. Night: Tent camp in Coldfoot vicinity.	Marshall, R. 1991 (reprint). <i>Arctic Village: A 1930s Portrait of Wiseman, Alaska</i> , University of Alaska Press, Fairbanks, p. 3-44
18-Jun	Coldfoot to Galbraith Lake	Breakfast in Coldfoot tent camp. AM: Drive to Galbraith Lake, with stops at frozen debris lobes, Sukakpak Mtn, Atigun Pass PM: Visit Arctic ground squirrel colony (Brian Barnes) Dinner: Cook camp dinner. Night: Tent camp at Galbraith Lake.	Daanen, R. P. , G. Grosse, M. M. Darrow, T. D. Hamilton, and B. M. Jones. 2012. Rapid movement of frozen debris-lobes: implications for permafrost degradation and slope instability in the south-central Brooks Range, Alaska. <i>Natural Hazards and Earth System Sciences</i> 12:1521-1537. AND Barnes, B. 1989. Freeze avoidance in a mammal: body temperatures below 0 degree C in an Arctic hibernator. <i>Science</i> 244:1593-1595.
19-Jun	Galbraith Lake	Breakfast: in Galbraith Lake tent camp AM: Overview of releve sampling along Galbraith Creek PM: Atigun Gorge hike Dinner and night: Tent camp at Galbraith Lake.	Breen, A. L. , M. K. Reynolds, I. Timling, D. F. Murray & D. A. Walker. 2014. Ecology and Evolution of Plants in Arctic and Alpine Environments. Pp. 149-178. In: Rajakaruna, N., B. Boyd & T. Harris. (Eds.) <i>Plant Ecology and Evolution in Harsh Environments</i> . Nova Science Publishers, Hauppauge, New York.
20-Jun	Galbraith Lake-	Breakfast: in Galbraith Lake tent camp AM: Brooks Range, Atigun Pass. Wildlife and alpine vegetation and landforms, north side of pass. Lunch: Summit of Atigun Pass. PM: South slope of Atigun Pass Dinner and night: Galbraith Lake	Huryn, A. and J. E. Hobbie. 2012. Chapters 1 to 5. "Introduction", "Bedrock geology", "Glacial geology", "Permafrost and patterned ground", "Habitats and patterned ground", p. 1-52 in <i>Land of Extremes: a Natural History of the Arctic North Slope of Alaska</i> . University of Alaska Press, Fairbanks, Alaska.
21-Jun	Galbraith Lake-	Breakfast: in Galbraith Lake tent camp AM and PM: Hike to Grizzly Glacier. High Alpine Environments and vegetation in the vicinity of Grizzly Glacier. All day hike. Lunch: Grizzly Glacier Dinner and night: Galbraith Lake	

22-Jun	Toolik Lake vicinity	Breakfast at Galbraith Lake. AM and PM: Overview of research at TFS talk (Donie Bret-Harte); plant collections, journals. Lunch, Dinner and night: Toolik Lake Field Station	Walker, D.A. , et al. Chapter 3. "Glacial history and long-term ecology in the Toolik Lake region", pp 61-80 in Hobbie, J. E. and G. W. Kling (eds). 2014. <i>Alaska's Changing Arctic: Ecological consequences for tundra, streams, and lakes</i> .
23-Jun	Toolik Lake-Happy Valley	Breakfast at TFS. AM: Imnavait Creek, Drive to Happy Valley. Visit poplar stand on Sag River. Lunch: Sack lunch from TFS PM: Drive to Happy Valley, Catch up on readings, plant collections & projects Dinner and night: Happy Valley tent camp	Hobbie, J. E. and G. W. Kling. Chapter 10 , "Ecological consequences of present and future changes", pp. 303-324 in <i>Alaska's Changing Arctic: Ecological consequences for tundra, streams, and lakes</i> . Oxford University Press, New York, NY.
24-Jun	Happy Valley	Breakfast at Happy Valley tent camp AM: Orientation to Foothills landscapes and vegetation, vegetation sampling near HV camp PM: Work on readings, plant collections and projects Dinner and night: Happy Valley tent camp	Shur, Y. L., and M. T. Jorgenson. 2007. Patterns of permafrost formation and degradation in relation to climate and ecosystems. <i>Permafrost and Periglacial Processes</i> 18:7-19.
25-Jun	Happy Valley – Sagavanirktok River	Breakfast at Happy Valley tent camp AM: Drive to Sag R. camp, stops at Sagwon, Gyrfalcon nest Orientation to Coastal Plain landscapes and riparian vegetation of the Sagavanirktok River PM: Work on class notes, plant collections, projects Dinner and night: Happy Valley or Sag River camp	Walker, D. A. , et al. 1998. Energy and trace-gas fluxes across a soil pH boundary in the Arctic. <i>Nature</i> 394:469-472.
26-Jun	Sag River or Happy Valley	Breakfast at Sag River or Happy Valley tent camp AM: Hike to Percy Pingo PM: Discussion of pingos and floristics of pingos, return to Happy Valley or Sag R. camp Dinner and night: Happy Valley or Sag River camp	Walker, M.D. 1990 <i>Vegetation and floristics of pingos, Central Arctic Coastal Plain, Alaska</i> vol 149 (Stuttgart, Germany: J. Cramer). Selected readings. Assign different chapters to different students.
27 Jun	Sagavanirktok River-Prudhoe Bay-Sag River	Breakfast: Prudhoe Bay Hotel All day field trip in Prudhoe Bay oil field (Kyla Choquette, and Tom Barrett) Dinner: Prudhoe Bay Night: Return to Happy Valley or Sag River camp, Discussion of BP tour	Walker, D. A. , M. K. Reynolds, M. Buchhorn, and J. L. Peirce. 2014. Landscape and permafrost change in the Prudhoe Bay Oilfield, Alaska. <i>Alaska Geobotany Center, University of Alaska, Fairbanks, Alaska.</i> AND Streever, W. , et al. 2011. Environmental change and potential impacts: applied research priorities for Alaska's North Slope. <i>Arctic</i> 64:390-397.
28 Jun	Sag River to Fairbanks	Breakfast: Sag River or Happy Valley tent camp AM: Drive to Coldfoot. Impacts of Dalton Highway. Stops at Sukapak Mtn, and Frozen Debris Lobes. Lunch: Coldfoot Truck Stop PM: Drive to Fairbanks.	Daanen, R.P. , Grosse, G., Darrow, M.M., Hamilton, T.D. and Jones, B.M. (2012) Rapid movement of frozen debris-lobes: implications for permafrost degradation and slope instability in the south-central

		Dinner and night: Dinner someplace in Fairbanks, Sleep in Dorms at UAF.	Brooks Range, Alaska. Natural Hazards and Earth System Sciences 12(5), 1521-1537.
29-Jun	Fairbanks	Breakfast: Dorm room or other. All day: Preparation for final presentations. Dinner: On own or BBQ Night: Dorms in Fairbanks.	None
30 Jun	Fairbanks	Breakfast: Dorm room or other. All day: Final presentations and course wrap up. Dinner: Celebration at local restaurant Night: Dorms in Fairbanks.	
1 Jul	Depart		

9. Course policies

Academic integrity:

Plagiarism and cheating will not be tolerated. Plagiarism is presenting another's work as new or original without citing your source.

For additional detail, see

<http://www.uaf.edu/library/instruction/handouts/Plagiarism.html>

Please speak with me if you have any questions about how to properly use other people's work.

Attendance policy:

Students are expected to actively participate in both the academic part and expedition part of camp, cooking, clean-up, waste management, emergencies, group decisions, and keeping a cheerful attitude in sometimes difficult field conditions such as rain, cold or snow.

10. Evaluation:

Graduate student grading (BIOL 695 students):

Attendance and participation in discussions:	200 pts
Field notebooks and plant collections	300
Oral presentation of research topic	200
Final research paper	<u>200</u>
TOTAL	900 pts

These criteria may be modified somewhat as the course progresses.

Final grades will be as follows: greater than or equal to 90% = A; 80-89% = B; 70-79% = C; 60-69% = D; < 60% = F.

Graduate students have the following requirements that go beyond the requirements for undergraduate students:

1. Graduate students will meet regularly as a group with one of the instructors to discuss the reading material and course content at a level specific to their thesis interests and graduate school requirements.
2. Their participation in course reading discussions will be as leaders of the discussions.
3. Their field notes and plant collections should be at a level that is appropriate for field researchers and herbarium collections, including descriptions of habitat and notation of plant community where the species are found,
4. They are required to produce 10-15 page research paper on a topic of their choice. Guidelines for this paper will be handed out on the first day of class. Due date is 15 Jul 2018. Students should arrange for an incomplete grade if they cannot meet this deadline.

11. Support Services:

Students are encouraged to contact the instructor with any questions, or to clarify the lecture or the assignments. I will be happy to review drafts of assignments and answer questions any time. Arctic Health, Room 254. Phone 474-2460, dawalker@alaska.edu. Home phone: 451-0800.

12. Disability Services:

UAF is obligated to provide accommodation only to the known limitations of an otherwise qualified student who has a disability. Please identify yourself to UAF Disability Services by applying for accommodations. To be considered for UAF Disability Services accommodations individuals must be enrolled for at least one credit as a UAF student. For more information send Disability Services an email at uaf-disabilityservices@alaska.edu by phone at (907)474-5655, or by TTY at (907)474-1827.

13. Discrimination policy:

University of Alaska Board of Regents have clearly stated in BOR Policy that discrimination, harassment and violence will not be tolerated on any campus of the University of Alaska. If you believe you are experiencing discrimination or any form of harassment including sexual harassment/misconduct/assault, you are encouraged to report that behavior. If you disclose sexual harassment or sexual violence to a faculty member or any university employee, they must notify the UAF Title IX Coordinator about the basic facts of the incident. Your choices for disclosure include:

- 1) You may confidentially disclose and access confidential counseling by contacting the UAF Health & Counseling Center at 474-7043
- 2) You may access support and file a Title IX report by contacting the UAF Title IX Coordinator at 474-7599
- 3) You may file a criminal complaint by contacting the University Police Department at 474-7721.

Course Library (2018)

Items not in manila folders: Books, data reports, natural history guidebooks, guides to the Dalton Highway and floras:

- Argus, G. W. 2004. A guide to the identification of *Salix* (willows) in Alaska, the Yukon Territory and adjacent regions. 85 pp.
- Armstrong, R. H. 1995. Guide to the Birds of Alaska. Alaska Northwest Books, Anchorage, AK. 322 pp.
- Barreda, J. E., J. A. Knudson, D. A. Walker, M. K. Reynolds, A. N. Kade, and C. A. Munger. 2006. Biocomplexity of Patterned Ground Data Report. Alaska Geobotany Center, Fairbanks, AK. 224 pp.
- Brodo, I. M., S. D. Sharnoff, S. Sharnoff, and S. Laurie-Bourque. 2001. Lichens of North America. Yale University Press, New Haven.
- Brown J, Kreig RA. 1983. Guidebook to permafrost and related features along the Elliot and Dalton highways, Fox to Prudhoe Bay, Alaska. Fairbanks, AK: Division of Geological and Geophysical Surveys.
- Cody, W. J. 2000. Flora of the Yukon Territory. NRC Research Press, Ottawa.
- Collette, D. W. 2004. Willows of Interior Alaska. U.S. Fish & Wildlife Service. 111 pp.
- Douglas, David C., Patricia E. Reynolds, and E. B. Rhode. 2002. Arctic Refuge coastal plain terrestrial wildlife research summaries. No. 2002-0001. US Fish and Wildlife Service, Reston VA.
- Harris, J. G. and M. W. Harris. 1999. Plant Identification Terminology, an Illustrated Glossary. Spring Lake Publishing, Spring Lake UT. 197 pp.
- Hasselbach, L. and P. Neitlich. 1988. A genus key to the lichens of Alaska. U.S. National Park Service, Gates of the Arctic NP&P, Fairbanks AK. 36 pp.
- Hobbie, J. E. and G. W. Kling, editors. 2014. Alaska's Changing Arctic: Ecological consequences for tundra, streams, and lakes. Oxford University Press, New York, NY.
- Hulten, E. 1968. Flora of Alaska and Neighboring Territories. Stanford University Press, Stanford, CA.
- Huryn, A and Hobbie, J. 2013. Land of Extremes: a natural history of the Arctic North Slope of Alaska. University of Chicago Press.
- Jorgenson, M.T. (ed.). 2011. Coastal Region of Northern Alaska. Guidebook to Permafrost and Related Features. Guidebook 10. State of Alaska, Department of Natural Resources, Division of Geological and Geophysical Surveys.
- Marshall, R. 1991 (reprint). *Arctic Village: A 1930s Portrait of Wiseman, Alaska*, University of Alaska Press, Fairbanks,
- Mull, C. G. and Adams, K. E. 1985. Dalton Highway, Yukon River to Prudhoe Bay, Alaska: Bedrock geology of the eastern Koyukuk basin, central Brooks Range, and eastcentral Arctic Slope. 155 pp.
- Munsell-Color. 1994. Munsell Soil Color Charts. Macbeth Div. of Kollmorgan Instr. Corp, NY.
- National Geographic Society. 1987. Field Guide to the Birds of North America.
- Sibley, D. A. 2000. The Sibley Guide to Birds. National Audubon Society. Alfred A. Knopf, New York. 154 pp.
- Skinner, Q. D., S. J. Wright, R. J. Henszey, J. L. Henszey, and S. K. Wyman. 2012. A Field Guide to Alaska Grasses. Alaska Dept. of Natural Resources, Palmer, AK. 384 pp.
- Streever, W. 2006. Long-term ecological monitoring in BP's North Slope oil fields. BP Exploration, Anchorage AK.
- Streever, W. 2007. Long-term ecological monitoring in BP's North Slope oil fields. BP Exploration, Anchorage AK.
- Streever, W. and S. Bishop. 2012. Long-term ecological monitoring in BP's North Slope oil fields. BP Exploration, Anchorage AK.
- Viereck, L. A. and E. L. Little, Jr. 1994. Alaska Trees and Shrubs. University of Alaska Press, Fairbanks, Alaska.
- Vitt, D. H., J. E. Marsh, and R. B. Bovey. 2007. Mosses, Lichens and Ferns of Northwest North America. Lone Pine Publisher. 296 pp.
- Walker, D. A. 1985. Vegetation and environmental gradients of the Prudhoe Bay region, Alaska. US Army Cold Regions Research and Engineering Laboratory, CRREL85-14, Hanover, NH. 240 pp.
- Walker DA, Auerbach NA, Nettleton TK, Gallant A, Murphy SM. 1997. Happy Valley Permanent Vegetation Plots. Boulder, CO: University of Colorado. Data Report.
- Walker, D. A., H. E. Epstein, V. E. Romanovsky, C.-L. Ping, G. J. Michaelson, R. P. Daanen, Y. Shur, R. A. Peterson, W. B. Krantz, M. K. Reynolds, W. A. Gould, G. Gonzalez, D. J. Nicolsky, C. M. Vonlanthen, A. N. Kade, H. P. Kuss, A. M. Kelley, C. A. Munger, C. T. Tarnocai, N. V. Matveeva, and F. J. A. Daniels. 2008. Arctic patterned-ground ecosystems: A synthesis of studies along a North American Arctic Transect. *Journal of Geophysical Research - Biogeosciences* 113:G03S01, doi:10.1029/2007JG000504.
- Walker DA, Hamilton TD, Ping C-L, Daanen RP, Streever WW. 2009. Dalton Highway Field Trip Guide for the Ninth International Conference on Permafrost. Fairbanks, AK: Division of Geological and Geophysical Surveys.
- Walker, D. A., M. K. Reynolds, M. Buchhorn, and J. L. Peirce. 2014. Landscape and permafrost change in the Prudhoe Bay Oilfield, Alaska. Alaska Geobotany Center, University of Alaska, Fairbanks, Alaska.
- Walker MD. 1990. Vegetation and floristics of pingos, Central Arctic Coastal Plain, Alaska. Stuttgart, Germany: J. Cramer

Items in manila folders (arranged alphabetically by author within subject folders): Journal articles and book chapters:

ANIMALS

- Amstrup, S. C., G. York, T. L. McDonald, R. Nielson, and K. Simac. 2004. Detecting denning polar bears with forward-looking infrared (FLIR) imagery. *Bioscience* 54: 337–344.
- Barnes, B. 1989. Freeze avoidance in a mammal: body temperatures below 0 degree C in an Arctic hibernator. *Science* 244:1593–1595.
- Buck, C. L., and B. M. Barnes. 1999. Annual cycle of body composition and hibernation in free-living Arctic ground squirrels. *Journal of Mammalogy* 80: 430–442.
- Felchhelm, R. G., B. Streever, and B. J. Gallaway. 2007. The Arctic Cisco (*Coregonus autumnalis*) subsistence and commercial fisheries, Colville River, Alaska: A conceptual model. *Arctic* 60: 421–429.
- Klein, D. R., Meldgaard, M., & Fancy, S. G. (1987). Factors determining leg length in *Rangifer tarandus*. *Journal of Mammalogy*, 68(3), 642–655.
- Klein, D. R., & Bay, C. 1994. Resource partitioning by mammalian herbivores in the high Arctic. *Oecologia*, 97(4): 439–450.
- Klein, D. R. 1995. Arctic ungulates at the northern edge of terrestrial life. *Rangifer*, 16(2): 51–56.
- Klein, D. R. 1999. Comparative social learning among arctic herbivores: the caribou, muskox and arctic hare. Pp 126–140 In *Mammalian social learning: comparative and ecological perspectives* (HO Box and KL Gibson, eds.). Cambridge University Press, United Kingdom.
- Klein, D. R. 2001. Similarity in habitat adaptations of Arctic and African ungulates: evolutionary convergence or ecological divergence? *Alces*, 37(2): 245–252.
- Klein, D. R. and et al. 2005. Management and conservation of wildlife in a changing arctic environment. Pages 597–648 in S. J. Hassol, editor. *Impacts of a Warming Arctic, Arctic Climate Impact Assessment Scientific Report*. Cambridge University Press, UK.
- Liebezeit, J. R., S. J. Kendall, S. Brown, C. B. Johnson, P. Martin, T. L. McDonald, D. C. Payer, C. L. Rea, B. Streever, A. M. Wildman, and S. Zack. 2009. Influence of human development and predators on nest survival of tundra birds, Arctic Coastal Plain, Alaska. *Ecological Applications* 19:1628–1644.
- Long, R. A., T. J. Martin, and B. M. Barnes (Eds.). 2005. Body temperature and activity patterns in free-living Arctic ground squirrels. *Journal of Mammalogy* 86:314–322.
- McDonald, T. L., W. J. Richardson, G. C. R., S. B. Blackwell, C. S. Nations, R. M. Nielson, and B. Streever. 2012. Detecting changes in the distribution of calling bowhead whales exposed to fluctuating anthropogenic sounds. *Journal of Cetacean Research Management* 12:91–106.
- Noel, L. E., M. K. Butcher, M. A. Cronin, and B. Streever. 2006. Assessment of effects of an oil pipeline on caribou, *Rangifer tarandus*. *The Canadian Field-Naturalist* 120:325–330.
- Owen, M., and J. Simerson. 2006. Can you hear me now? Polar bears and sensitivity to noise pollution. *Conservation and Research for Endangered Species*:1–2.
- Sheriff, M. J., G. J. Kenagy, M. Richter, T. Lee, O. Toien, F. Kohl, C. L. Buck, and B. M. Barnes. 2011. Phenological variation in annual timing of hibernation and breeding in nearby populations of Arctic ground squirrels. *Proceedings of the Royal Society B: Biological Sciences* 278:2369–2375.
- Sheriff, M. J., M. M. Richter, C. L. Buck, and B. M. Barnes. 2013. Changing seasonality and phenological responses of free-living male arctic ground squirrels: the importance of sex. *Philosophical Transactions of the Royal Society B: Biological Sciences* 368:20120480–20120480.
- Stickney, A. A., T. Obritschkewitsch, R. M. Burgess. 2014. Shifts in fox den occupancy in the greater Prudhoe Bay Area, Alaska. *Arctic* 67: 196–202.
- Williams, C. T., B. M. Barnes, and C. L. Buck. 2011. Daily body temperature rhythms persist under the midnight sun but are absent during hibernation in free-living arctic ground squirrels. *Biology Letters* 8:31–34.
- Williams, C. T., M. J. Sheriff, J. A. Schmutz, F. Kohl, Ø. Tøien, C. L. Buck, and B. M. Barnes. 2011. Data logging of body temperatures provides precise information on phenology of reproductive events in a free-living Arctic hibernator. *Journal of Comparative Physiology*, B 181:1101–1109.

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