FRONTIERS

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BLM

Alaska

SCIENCE ON PUBLIC LANDS

Science Center intern Jack Austin takes a look at the butterfly he caught during the 2013 butterfly count.
Photo by Luise Woeflien

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Bringing Wildlife Leadership Home

Karen J. Laubenstein

Dallas Seavey cruises through Campbell Tract during the Iditarod Ceremonial Start in Anchorage. He later won the 2014 Iditarod Sled Dog Race.

Welcome to Frontiers

It has been a good experience working on this science issue of *Frontiers*. Until we pull it together, we don't usually know about the many studies happening across the state and the research that is helping our understanding of land use planning and management, wildlife resources, cultural resources, energy resources, and so much more.

It is also great to see youth involved in projects like the butterfly count and ecosystem monitoring at the BLM Campbell Tract. It is wonderful how teachers and the BLM Campbell Creek Science Center are able to use the Iditarod Sled Dog Race in so many academic areas, including science. Check out what happens at the Science Center during the finish to the Iditarod's Ceremonial Start in Anchorage.

This issue also features unique opportunities for you to get involved with your public lands. There are current openings for Alaska residents on the BLM-Alaska Resource Advisory Council. Check out the great information on recreation and more at the BLM exhibit booths at the upcoming Great Alaska Sportsman and Fairbanks Outdoor shows.

Karen

Karen J. Laubenstein
Editor

@BLMAlaska

Social Media Update

#BLMIditaChat a Howling Success

It was an action-packed two hours on Feb. 11, when BLM-Alaska hosted a Twitter Chat @BLMAlaska with Alaskan mushers and BLM Iditarod National Historic Trail coordinator Kevin Keeler. With classes from Alaska, Texas, and Italy tweeting questions, a command center in the BLM-Alaska State Office with some mushers, other mushers on the phone, Keeler, a dog trainer, and even a broadcast news team, it was a high-energy event. The official 2014 Iditarod Teacher on the Trail, Jennifer Reiter, connected from her classroom. Iditarod veteran Jodi Bailey says she can't wait to do a #BLMIditachat again next year!

Among questions about dogs and mushing, there was plenty of history and culture information on the Iditarod National Historic Trail, interspersed with recreation opportunities. Read the conversation at http://www.blm.gov/ak/BLMIditaChat

NPR-A Subsistence Advisory Panel joins Facebook

An advisory panel on subsistence in the National Petroleum Reserve in Alaska (NPR-A), nicknamed SAP (the Subsistence Advisory Panel), now has its own Facebook page. The SAP gives advice to the BLM on ways to minimize the impact of oil and gas exploration and other activities on subsistence use in the NPR-A. Members of the group volunteer. Find out more, visit: https://www.facebook.com/BLM.NPRA.SAP

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www.blm.gov/ak/frontiers

calendar

March

10 Greater Moose's Tooth Unit 1 Public Meetings begin

First meeting is in Point Lay. See page 15 for full schedule.

27 Great Alaska Sportsman Show

March 27-30 at the Sullivan Arena in Anchorage. Stop by the BLM booth and get all the info you need to enjoy your public lands this summer. http://greatalaskasportsmanshow.com.

30 White Mountains NRA hosts the White Mountains 100 Race

Participants use human power to compete on skis, bike, or on foot in this 100 mile race. Race starts at 8 a.m. at the Wickersham Dome Trailhead.

April

14 New Artist-in-Residence Program begins in the White Mountains NRA

April 14-18 the White Mountains NRA will host an Artist-in-Residence who will create a piece inspired by the area and helps promote public lands. See page 19.

16 Fireside Chat: Learning to Dive – How Mammals Managed to Live in the Sea

Program begins at 7 p.m. at the BLM Campbell Creek Science Center.

23 Resource Advisory Council Meeting

April 23 and 24 in Fairbanks. See Page 17. Visit: www.blm.gov/ak/rac for more info.

25 Fairbanks Outdoors Show

April 25-27 at the Carlson Center. Stop by the BLM booth and get all the info you need to enjoy your public lands this summer! http://www.carlson-center.com/outdoorTravelShow.php

Fisheries Biologists sorting macroinvertebrates samples at Red Devil Creek.

Jason Post

BLM MIDDLE KUSKOKWIM RIVER FISH STUDY:

LEARNING MORE ABOUT MERCURY IN WESTERN ALASKA FISH

Researchers at BLM are completing a study of methyl mercury levels in fish along the middle section of the Kuskokwim River and they've discovered something nobody expected — the natural sources of mercury in the large tributaries of the Kuskokwim River seem to play a far greater role in determining mercury concentrations in northern pike tissues than does the Red Devil mine.

Mercury is unique because, unlike other metals, fish store mercury in their fat and tissue and pass the mercury on to larger fish when eaten. That means larger predator fish, like northern pike, can accumulate increasing levels of mercury over time. Researchers found that the older, larger pike often had the highest levels of mercury in their tissue.

Mercury finds is way into lakes, rivers and oceans from a number of different sources, including burning coal, volcanoes, forest fires, melting permafrost, and weathering of rocks that contain mercury minerals. Cinnabar, a mineral composed of mercury and sulfur, occurs naturally in southwestern Alaska. When cinnabar becomes exposed to air, it weathers and slowly releases mercury into the surrounding environment. Weathering cinnabar and processed cinnabar ore at abandoned mine sites, such as the Red Devil and Cinnabar Creek Mines, are known sources of mercury in the streams and rivers of southwestern Alaska.

When inorganic mercury finds its ways into the lakes and rivers, bacteria can convert the inorganic mercury into methyl mercury, which fish and other organisms can easily absorb and accumulate over time. Methyl mercury is the form of mercury typically found in both freshwater and marine fish tissue. This form of mercury is of particular concern because methyl mercury can damage the developing nervous systems of babies and children.

Northern pike mercury data collected by the U.S. Fish and Wildlife Service in the Yukon Delta National Wildlife Refuge and along the lower Kuskokwim River found that lower Yukon River pike exhibited higher concentrations of mercury than levels in pike captured in the lower Kuskokwim River. Previous work completed by the USGS had concluded that fish downstream of abandoned mercury mines exhibited elevated levels of mercury compared to regional baseline samples. The role of other watershed specific sources, such as cinnabar geology, placer mine tailings, and melting permafrost was largely unknown.

In 2010, the BLM began a study to understand mercury in resident freshwater fish within the Middle Kuskokwim River basin. The BLM used a modified sampling design compared to previous fish tissue studies conducted in Alaska. The BLM collected samples from sediments, water, stream insects, small tributary fish, as well as more mobile large predator fish in order to identify specific mercury source areas. Over the past three years, the BLM and Alaska Department of Fish and Game (ADFG) collected and sampled over 1,200 fish from the Kuskokwim River and 17 of its tributaries, covering 730 miles of stream. These samples expanded the available dataset on mercury concentrations of sampled fish and allowed researchers to identify potential hotspots in the region that may be contributing mercury to harvested fish by local communities, such as northern pike.

Study results show that aquatic insects and smaller fish (such as Dolly Varden and slimy sculpin) living in tributary streams downstream of mined areas have elevated concentrations of mercury, as expected from the findings by the USGS in 2000. Small tributary fish collected in Red Devil and Cinnabar creeks had much higher concentrations of mercury compared to fish in other tributaries. Cinnabar deposits and abandoned mines occur along both Red Devil and Cinnabar creeks.

Large predatory fish (primarily northern pike and burbot) collected in rivers such as the Kuskokwim, had variable levels of mercury across the sampling area, but researchers recognized some patterns. Pike sampled in the George and Holitna rivers, for example, had much higher concentrations of mercury than pike caught in sections of the Kuskokwim and Stony rivers.

Where had the fish been before they were sampled in this study? Researchers could easily derive conclusions from small tributary fish and aquatic insect sampling, since they seldom stray from those streams. This was not the case for larger fish such as burbot and pike, which are known to migrate seasonally to access prime overwintering, spawning, and summering habitats. Understanding seasonal fish movement patterns became a key focus of the study.

To better understand why, for example, pike in the George River had elevated levels of mercury, the BLM with the assistance from ADFG began using nonlethal tissue sampling methods paired with implanted radio transmitters. Researchers were able to track the seasonal movements of hundreds pike, burbot, and Arctic grayling over a 1-3 year period. Tracking the movement of fish with known tissue concentrations allowed researchers to better understand where they were being exposed to mercury and other metals. If a group of fish have similar tissue concentrations and spend most or all of their time in a particular watershed, then the likely source of the mercury is in that same watershed. The relatively large number of mineral deposits with cinnabar in the Kuskokwim basin

Matthew Varner

Brian Collyard (ADFG) holding a pike with implanted radio transmitter (antenna wire visible).

Matthew Varner

Researchers electrofishing at Fuller Creek.

suggest local geology is a likely a primary source of mercury in fish.

Fish tracking data shows that George River pike generally stay in the George River and the same is true for pike in the Holitna River. The presence of multiple cinnabar deposits and conditions that promote mercury methylation suggest the elevated concentrations of mercury in the George and Holitna rivers are the result of conditions within the two watersheds.

In contrast, burbot samples were highly variable in mercury concentrations. Burbot move seasonally over large distances. In fact, many burbot appeared to move hundreds of river kilometers in fairly short periods of time and some burbot appear to spend much of the summer season in the lower, tidally influenced section of the Kuskokwim River.

The location of the Red Devil mine on the middle Kuskokwim River make these results significant. Based on this study, the natural sources of mercury in the large tributaries of the Kuskokwim River seem to play a far greater role on pike tissue mercury concentrations than does the Red Devil mine. The great distances that burbot travel within the Kuskokwim make it difficult to correlate their tissue concentrations with any single source or tributary. These studies are helping to better understand the sources and levels of methyl mercury in fish in Western Alaska. The fish tissue studies will continue through 2014. In the meantime, the BLM is taking an early action at the Red Devil Mine (see next page).

—Matthew Varner
Fisheries Biologist
BLM Alaska State Office

***Note: Fish are very nutritious. Many fish species, including salmon, are low in mercury and fish should be part of a healthy diet. Women who may become pregnant and parents should reference fish consumption guidance developed by the State of Alaska* (http://www.epi.alaska.gov/eh/fish/default.htm).**

Updates on the project can be found at: http://www.blm.gov/ak/st/en/prog/fisheries/rdm_fish.html.

EARLY CLEAN-UP ACTION PROPOSED FOR RED DEVIL MINE

After collecting samples from soil, sediment, surface water, and groundwater to analyze for metals, BLM researchers learned elevated concentrations of mercury, arsenic, and antimony from mine tailings (waste rock left over from mining operations) have been seeping into the groundwater and surface water at the Red Devil abandoned mercury mine site on the Kuskokwim River (also see the "BLM Middle Kuskowim River Fish Study" article on page 4).

These results prompted the BLM to develop an early action plan outlining three alternatives to prevent further migration of the tailings:

- Lining the section of Red Devil Creek nearest the tailings pile with concrete cloth;
- Installing culvert pipe in the section of Red Devil Creek near the tailings; or,
- Excavating a new channel in Red Devil Creek for the section nearest to the tailings and moving the tailings back from the creek.

Teresa McPherson

Mike McCrum gives Early Action proposal presentation at Lower Kalskag public meeting.

The BLM is planning the early action at Red Devil Mine for the 2014 field season. After gathering feedback from western Alaska communities and local tribes in Akiak, Bethel, Red Devil, Sleetmute, Chuathbaluk, Upper Kalskag, Lower Kalskag, and Crooked Creek, BLM will issue an Action Memorandum, the decision document for the proposed action.

You can view the BLM's draft engineering evaluation/cost analysis for this early action and the administrative record for the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) investigation on the project website (www.blm.gov/ak/red_devil_mine) and in person at the Anchorage Field Office, 4700 BLM Road, in Anchorage.

—Mike McCrum
Environmental Engineer
BLM Alaska State Office

—Teresa McPhereson
Public Affairs Specialist
BLM Anchorage Field Office

Teresa McPherson

Angela Matz, a USFWS fish toxicologist who worked on the Kuskokwim River Area Fish tissue study with BLM Fish Biologist Matthew Varner, answers elder's question in Bethel.

Teresa McPherson

Native elders look over handouts at Upper Kalskag meeting.

BLM HELPS PERMIT BROADBAND EXPANSION

KEEPING PEOPLE CONNECTED IN ALASKA

In *Frontiers* issue 115, we highlighted BLM's role in the TERRA project.

Phase 1, The first segment, TERRA-Southwest, was built in 2011. Phase 1 involved 400 miles of new fiber-optic cable and 13 new microwave towers connecting 65 communities.

Phase 2, the northwest portion of the project, is also completed. It connected 68 western Alaska communities so far.

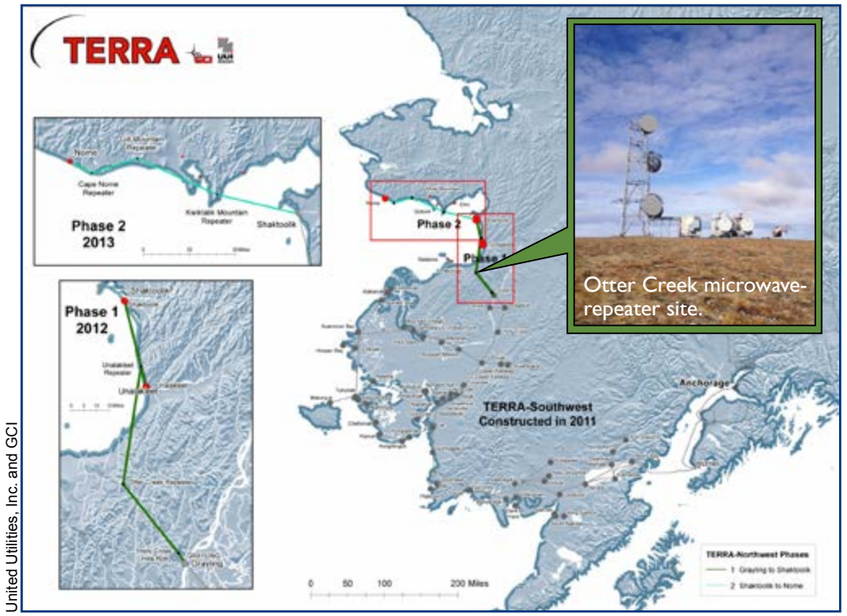
Phase 3 is underway to connect Nome to Kotzebue. The BLM has already approved the plans, as five of the six repeater sites will be on BLM-managed public lands.

For Phase 4 "TERRA-Yukon," the ground work is laid, and the applications are submitted. This phase will connect a repeater outside of Kotzebue east to Galena. The project vision is to connect to Fairbanks and have a complete loop.

Tom Sparks the BLM Natural Resource Program Coordinator stationed in Nome says, "It's important that they complete the circuit, so to speak, so that if there is a break in the connection, they can run the signal the other way."

Once all phases of the TERRA project are completed, the Norton Sound region of northwest Alaska will have terrestrial, non-satellite broadband service to communities and more than 6,000 residents.

The TERRA-Northwest projects have faced the same challenges as TERRA-Southwest: building repeater sites and towers in areas without a road system, while dealing with Alaska's climate and geological realities. GCI used heavy-lift helicopters to deliver communications and power modules to mountaintop microwave-repeater sites, including



United Utilities, Inc. and GCI

TERRA NW Project Map with inset of Otter Creek site.

the BLM-managed remote Otter Creek, Golovin, and Hill 2211 sites.

BLM Anchorage District worked with the U.S. Fish and Wildlife Service and land owners to complete an environmental assessment for the proposed rights-of-way and permits. The analysis concluded the immense benefit to communities far outweighed any negligible impacts to federal lands and resources.

Nome residents are the most recent additions to the broadband network. It made all the difference this past Christmas. Residents took to social media and expressed gratitude for having the ability to video conference with family Christmas morning and open presents together.

Tom Sparks noticed an improvement with Nome's broadband. "I have seen a substantial difference at home. [The Internet] is much faster. I just have to be careful not to go over my allotted broadband having too much fun on the web."

Today, the TERRA projects are improving lives not only through local internet service, but in the local energy sector as well. Energy companies in Southwest Alaska can now monitor and transmit data from energy grids faster. In some cases, field personnel can now communicate and transfer data back to base camp and headquarters while still in the field. Companies are also able to get real-time technical help from engineers and suppliers around the world.

—Tom Sparks
Natural Resource Program Coordinator
BLM Nome Field Station

—Vanessa Rathbun
Visual Information Specialist
BLM Alaska State Office

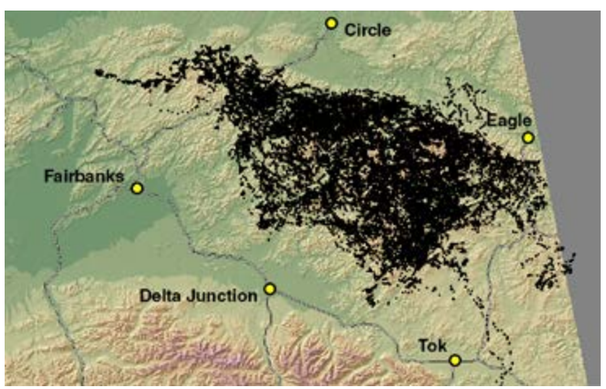
CARIBOU STUDIES BENEFIT MANAGERS, USERS

Teshekpuk herd. Photo by Scott Guyer

The BLM Fairbanks District Office manages public lands that include the range of some of Alaska's largest caribou herds—the Central Arctic, Teshekpuk, Western Arctic, and Fortymile herds—as well as numerous smaller herds. As human activities expand in Alaska, the challenge for land managers is to consider the needs of the caribou herds and ensure they remain a visible, healthy part of our landscape. Each caribou herd has its own distinct calving area but may share winter range with other herds. Caribou must keep moving to find adequate food. Large herds often migrate long distances (up to 400 miles) between their summer and winter ranges, while some smaller herds might not migrate at all. The BLM continues to research, study, and monitor the caribou. Below are examples of caribou studies and monitoring projects in which the Fairbanks District Office is involved.

Fortymile and White Mountain Caribou

In east-central Alaska, the BLM has cooperatively monitored the Fortymile and White Mountains caribou herds with the Alaska Department of Fish & Game (ADFG) for many years. The Fortymile Caribou Herd in particular is an important resource to subsistence hunters, sport hunters, wildlife watchers as well as an important component of Fortymile landscape health. This woodland caribou herd



Location of GPS-collared caribou of the Fortymile and White Mountains herds from October 2010 through September 2012. A collar typically transmits the caribou's location once every five hours via satellite.

Craig McCaa

Caribou running along a ridge paralleling Birch Creek Wild and Scenic River in the Steese National Conservation Area.

migrates across the international border with Yukon, Canada, and spends the most critical portions of the year in Alaska.

Challenges to protect the Fortymile herd include climate changes and increases in fire occurrence, intensity, and size. Fire in winter habitat is particularly critical since lichens, the preferred winter diet of these animals, take at least 50 years to recover. Territorial, state and federal agencies, tribes, First Nations, subsistence and sport hunters, the University of Alaska Fairbanks, and other interests are working together to support cohesive management to aid recovery of this herd, with emphasis on herd expansion into historic range. The result is a strong federal-state partnership to monitor and manage the herd jointly.

Recent use of GPS radio collars with satellite uplinking gives land managers real-time information on the herd's location and numbers to better manage caribou hunts and identify important seasonal habitats and movement corridors. BLM biologists partner with researchers at the University of Alaska Fairbanks to measure the effectiveness of caribou habitat management and changes in vegetation related to climate change.

North Slope Caribou

In 2013, for the first time ever, the ADFG was able to count all four North Slope caribou herds during one summer. The results are being tabulated and should become available this year.

Teshekpuk Caribou Herd

The BLM has worked cooperatively with the ADFG and the North Slope Borough for over three decades to study and monitor the Teshekpuk Caribou Herd. The Teshekpuk population grew steadily from 1978 to 2008. In 2011, the numbers were down slightly.

The percent of adult female Teshekpuk caribou bearing calves in June has been declining since 1996, and the proportion of the herd population that is short-yearlings in spring has been declining since 1992. However, there is no detectable trend in the adult female mortality rate. These results do not yet clearly indicate an overall downward trend for the Teshekpuk herd, but serve as a possible warning sign. To help understand the reason for part of these results the BLM and ADFG initiated a three-year study of calf mortality in 2011. For both 2011 and 2012, about 75-80 percent of new calves survived through the following October. Survival in 2013 is on course for a similar rate. Predation accounted for about 75-85 percent of those deaths, with starvation and accidents accounting for the remainder.

Jason Post

Caribou cross Quartz Creek Trail in the White Mountains National Recreation Area.

Stacey Fritz

Atqasuk subsistence hunter Wanda Kippi and her son Austin hunt for caribou near their family's camp on the Meade River.

Subsistence Caribou Studies

In 2012, the BLM and North Slope Borough began a cooperative project to study Teshekpuk Lake caribou conditions and health by using animals from subsistence hunters. The volunteer hunters receive fuel vouchers for their participation. They assess age and body condition, record back fat depth, record parasites, collect blood samples, record milk appearance and collect the female reproductive tract if applicable, and collect and turn in the lower jaw, lower hind leg bone, and about two pounds of muscle tissue. The Borough's veterinarian uses these samples to further examine animal health. Through 2014, hunters submitted data and samples for 15 harvested caribou and observations for 10 more. The project has been limited to Barrow so far, but may expand to other villages if the project proves to be manageable and valuable.

—Craig McCaa, Jim Herriges and Dave Yokel contributed to this article
BLM Fairbanks District Office

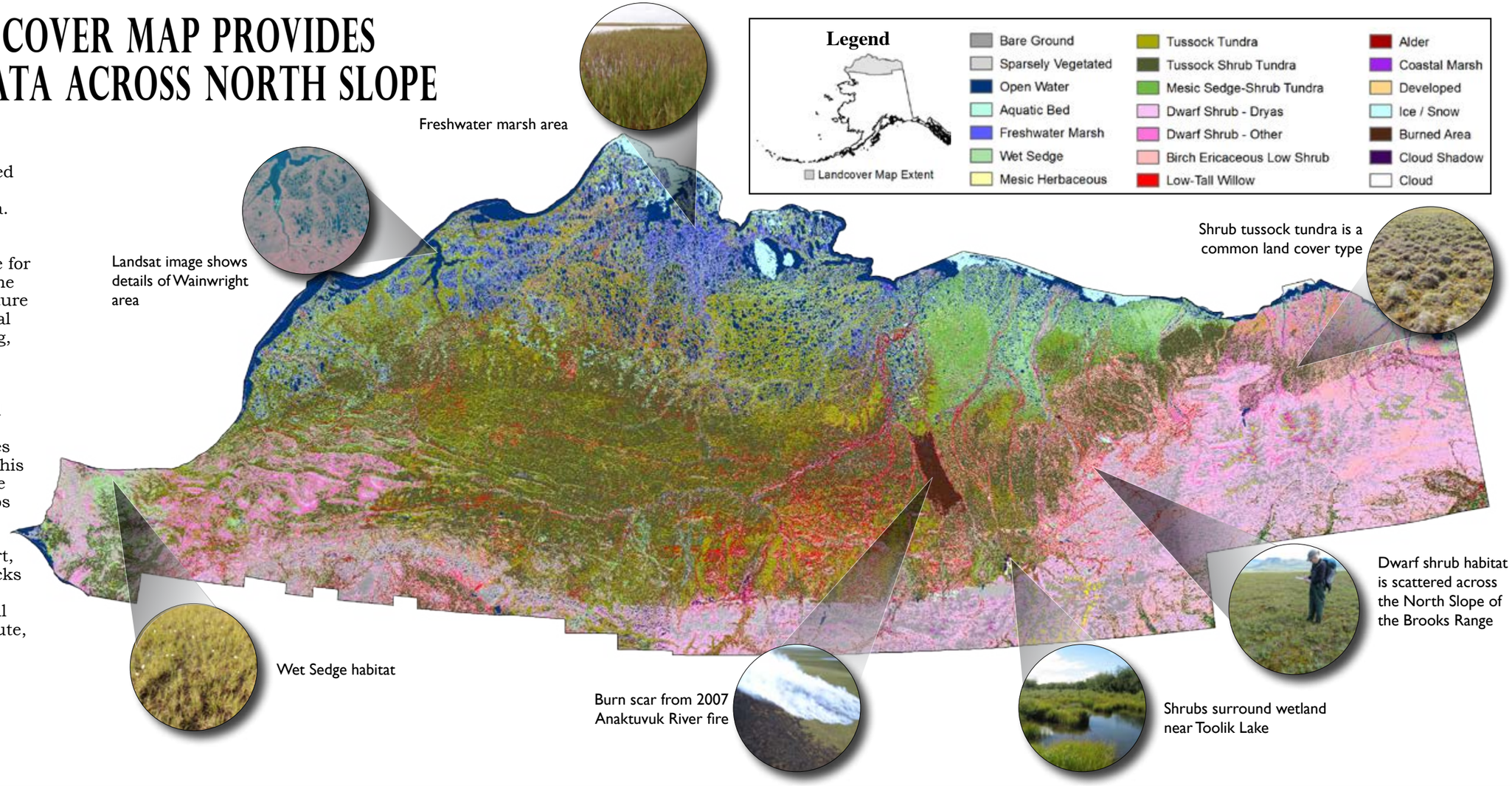
NEW LAND COVER MAP PROVIDES CONSISTENT DATA ACROSS NORTH SLOPE

When the North Slope Science Initiative (NSSI) first began, there was an obvious need for a land cover map to provide consistent data across the entire North Slope of Alaska. In 2013, after four years of work, that goal became a reality. The NSSI land cover map provides a single, reliable baseline reference for anyone with interests in the North Slope. The map will be invaluable when conducting future initiatives, such as those involving terrestrial habitat, hydrology, development, monitoring, or research.

The map represents land cover types from the Ecological Systems of Alaska, developed by NatureServe and the Alaska Natural Heritage Program. State and federal agencies throughout Alaska use this classification. This means the map can join seamlessly with the existing statewide mosaic of land cover maps that use the same land cover classes.

The NSSI led and funded this mapping effort, collaborating closely with lead partners Ducks Unlimited, Inc., Alaska Natural Heritage Program, and Spatial Solutions, Inc., as well as the BLM, Michigan Tech Research Institute, U.S. Geological Survey, and the Arctic Landscape Conservation Cooperative.

Learn more about this project and the next phase at http://www.northslope.org.



KEEPING WATCH ON THE ARCTIC

Some of the world's harshest conditions, including extreme cold, extended darkness, and short growing seasons, exist in the Arctic. Despite these conditions, plants and animals have adapted. As Arctic ecosystems come under increasing pressure from environmental change, there is a growing need to monitor the plants and animals that call the Arctic home. Monitoring improves our understanding of how ecosystems function, helps track changes, and is critical for developing responses to the challenges presented by a changing environment.

Representatives of the eight Arctic nations recently completed development of just such a monitoring plan. The Conservation of Arctic Flora and Fauna, the biodiversity working group of the Arctic Council, established the Circumpolar Biodiversity Monitoring Program to address the need for coordinated and standardized monitoring of Arctic environments. The goal of the plan is to improve the collective ability of scientists, communities, and those who hold traditional knowledge to detect, understand and report on long-term change in the terrestrial ecosystems and biodiversity of the Arctic. The BLM and the North Slope Science Initiative are the co-leads for the Circumpolar Biodiversity Monitoring Program.

For more information, visit www.northslope.org.

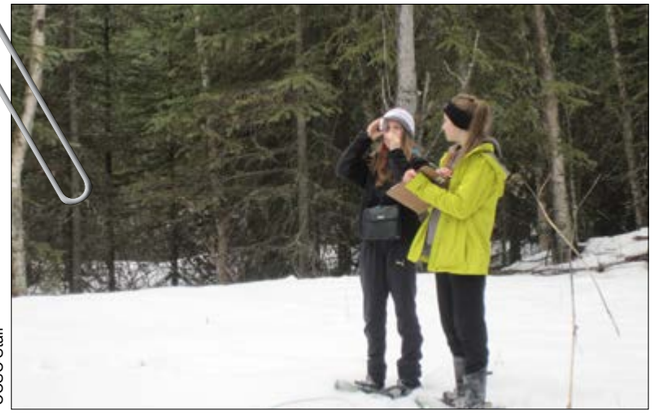
John Payne

Back row (l to r): Marlene Doyle (Canada), Morten Wedge (Norway), Jason Taylor (USA), John Payne (USA), Evgeny Syroechkovskiy (Russian Republic), Mikhail Soloviev (Russian Republic). Middle row (l to r): Micheal Svoboda (Canada), Starri Heidmarsson (Iceland), Jukka Samele (Finland), Maribeth Murray (Canada), Mora Aronsson (Sweden), Peter Aastrup (Denmark). Front row (l to r): Kari Fanner (Icelend), Christine Cuyler (Greenland), Courtney Price (Iceland), Gabriela Ibarguchi (Canada), Tom Christenson (Denmark).

John Payne

Arctic fox in Norway. The population is declining around the Arctic, except in the U.S. where the population is increasing due to human activity.

YEAR 'ROUND SCIENCE AT CAMPBELL TRACT



CCSC Staff

Students from Kincaid Elementary use an inclinometer to measure the height of trees on BLM's Campbell Tract.

Fifth graders learn about forests and ecosystem monitoring

Last May, 62 sixth-graders from Kincaid Elementary in Anchorage collected forestry data on the BLM Campbell Tract for the BLM's Forest Vegetation Information System. The data-collection effort was part of the Earth Ranger Academy at the Campbell Creek Science Center.

The Academy is the culminating life science experience for upper elementary students of the Anchorage School District. Multi-day Earth Ranger programs focus on ecosystem concepts and the skills and tools used in ecosystem monitoring. Students and teachers continue their learning through a service project in the community. Kincaid Elementary chose to do their service project on the BLM's Campbell Tract to benefit public land.

To collect their data, students surveyed forested plots in twelve acres. They collected information on tree type, number, height, condition, and diameter. They also recorded the topological characteristics of the plots and collected tree cores. This data was provided to Eric Geisler, BLM-Alaska Forester, to input into the forest information system.

Later in the summer, high school interns taking part in the Science Center's Summer Youth Internship program continued the effort by counting the rings in the tree cores and providing the information to Geisler. The BLM's Forest Vegetation Information System describes existing vegetation and landscapes, provides data to run forest growth and forest structure models and maps, and provides inputs to wildlife habitat models. The information gathered by these students helps with monitoring the forests of the BLM Campbell Tract.

Counting Butterflies

Arctic White Butterfly

This summer, staff from the BLM Campbell Creek Science Center and community volunteers teamed up to count butterflies, as part of the National 4th of July Butterfly Count sponsored by the North American Butterfly Association. This was the 15th consecutive year of the count, and the only one in Alaska. Information from this long-running data set helps to identify butterfly distribution and the relative population sizes of butterflies.

With nets, guide books, and collective expertise the team searched for butterflies within a 15-mile radius of the Science Center. This includes the BLM Campbell Tract, adjacent Heritage Land Bank Land, and the alpine environment of nearby Chugach State Park's Glen Alps trailhead.

Volunteers captured and released 30 different individual butterflies representing nine different species. The data from the count went to the North American Butterfly Association for publication in their official report.

Community volunteers with butterfly expertise helped with the count, along with a staff member from the University of Alaska Fairbanks Cooperative Extension Service. This year there was also a concerted effort to engage youth and cultivate future biologists. Science Center staffers received help from students in the Center's Summer Youth Internship Program and a student in BLM's Pathways program.

Canadian Tiger Swallowtail

Luise Woelflein

Science Center intern Jack Austin carefully transfers the butterfly he caught with a net into a collecting jar during the 2013 butterfly count.

Luise Woelflein

Afterward Jack takes a close-up look at what he caught.

Assessing the Health of Campbell Creek

Twice every year, staff from the BLM Campbell Creek Science Center and area volunteers collect samples and data to help monitor the biological impacts that environmental education and recreation activities may be having on the two creeks that cross the BLM Campbell Tract in Anchorage. The monitoring effort grew out of the Campbell Creek Environmental Education Center Development Plan and Environmental Assessment written in 1993. Studying these factors as a way of evaluating the health of a body of water is a "biological assessment" or "bioassessment."

In June and September of 2013, the teams conducted bioassessments on the South Fork of Campbell Creek and Little Campbell Creek. They gathered chemical and physical data about each creek, including measuring pH and dissolved oxygen, testing conductivity, taking water temperatures, and calculating the volume rate of water flowing past a given point.

The teams also collected and sorted aquatic macroinvertebrates. These small animals — including worms, snails, and larval forms of insects — live on rocks and submerged wood in the creeks. Some species such as stoneflies and mayflies can only live in cold waters of a certain temperature, with the right amount of dissolved oxygen, and little to no pollutants. Because stoneflies and mayflies are very sensitive to different chemical and physical conditions, their presence is a sign of a healthy creek.

This year, as with past years, the teams found a healthy abundance of macroinvertebrates in both creeks. This is important because macroinvertebrates are significant parts of the food chain as larger animals, such as fish and birds, rely on them as a food source.

To learn more the Science Center's creek monitoring efforts, check out the YouTube video: http://www.youtube.com/watch?v=nVEZG6qHNEU

—Jeff Brune
Manager of the Campbell Creek Science Center
BLM Anchorage District Office

Luise Woelflein

Volunteer Dan Bogan helps to assess the health of Campbell Creek by sampling the diversity of macroinvertebrates, including larva forms of insects clinging to undersides of rocks.

IDITAROD CEREMONIAL START FINISHES AT CAMPBELL TRACT

An estimated 2,000 race fans visited the BLM-Alaska's Campbell Tract in Anchorage for the March 1st ceremonial start of the Iditarod Trail Sled Dog Race. Through partners, the BLM provides a chance to see the action up close. BLM also opens up its Campbell Creek Science Center so nearly 400 visitors could warm up and participate in educational activities focused on the Iditarod theme. Visitors caught up with family and friends, viewed interpretive displays on the Iditarod National Historic Trail, viewed diptheria slides and learned about the serum run from Cathy Xavier of the Alaska Department of Health, tested their knowledge of the Iditarod National Historic Trail and earned a commemorative Iditarod cedar plaque, and built their own Iditarod musher out of craft materials.

As the federal administrator of the trail, BLM-Alaska issues special recreation permits for others uses, too, including the Iron Dog snowmachine race and the human-powered Iditarod Trail Invitational.

Karen J. Laubenstein

(Top Left) Scott Janssen, known as the "mushing mortician," threw out dog booties and interacted with fans as he rode by. *(Middle Left)* Rookie Monica Zappa waves to a crowd of young spectators at Campbell Tract. *(Bottom Left)* Top competitor Aliy Zirkle is all smiles as she finishes the ceremonial start. *(Top Center)* Mitch Seavey cruises into the finish.

(Top Right) Families at the BLM Campbell Creek Science Center were treated to interactive displays featuring wildlife that can be found at Campbell Tract. *(Middle Right)* This first grader is making his own Iditarod National Historic Trail map so he can follow the mushers as they make their way to Nome over the next several days. *(Bottom Right)* Visitors tried their hand at the Iditarod Wheel of Trivia.

BLM GATHERS PUBLIC COMMENTS ON FIRST PROPOSED OIL PRODUCTION WELL IN NPR-A

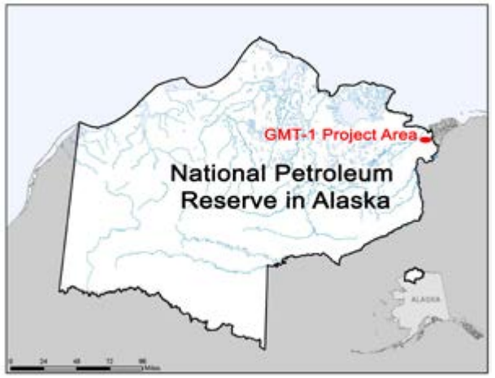
The BLM has released a draft environmental review for the proposed Greater Mooses Tooth Unit 1 (GMT1) oil and gas development in the National Petroleum Reserve in Alaska (NPR-A). The release launched a public comment period that is open through April 22.

After it's the draft review's release on Feb. 21, the BLM hosted public meetings in Anchorage, Fairbanks, Point Lay, Atqasuk, Barrow, Nuiqsut, Wainwright, and Anaktuvuk Pass. The North Slope village meetings also served as hearings on potential impacts to subsistence resources, as required by the Alaska National Interest Lands Conservation Act.

Last July, ConocoPhillips, Alaska, Inc., submitted applications to construct a drill site, pipelines and other facilities to support development of petroleum resources within the Greater Mooses Tooth Unit. Their proposed project would include construction of an 11.8-acre drill pad, an eight-mile access road, above-ground elevated pipelines, and an electric power line connecting the GMT1 drill pad to ConocoPhillips's CD-5 drill pad currently under development.

The GMT1 pad would have a capacity for up to 33 product wells, including several injection wells, and would be located on a federal oil and gas lease issued previously by the BLM. The GMT1 project proposes access to both federal and Arctic Slope Regional Corporation oil and gas resources.

For more information, contact Bridget Psarianos, BLM-Alaska Project Lead, at (907) 271-4208.



Submit Comments on the GMT1 Draft Environmental Review

The draft environmental review is available at http://www.blm.gov/ak/GMTU1. Public comments can be submitted by any of the following methods:

email: gmt1comments@slrconsulting.com

fax: (907) 271- 3933

mail: GMT1 Draft SEIS Comments
Attn: Bridget Psarianos
222 West 7th Avenue, Stop #13
Anchorage, Alaska 99513.

In person: BLM Public Information Center at 222 W. 7th Avenue, Anchorage, AK 99513.

To view documents: visit BLM Fairbanks District Office, 1150 University Avenue, Fairbanks, Alaska 99709; and the BLM Alaska State Office Public Room, 222 West 7th Avenue, Anchorage, Alaska 99513.

If you have questions about the public comment process, please call Bridget Psarianos, BLM-Alaska Project Lead at (907) 271-4208.

It may look like just ice and snow in the NPR-A now, but there could be development in the future.

RESOURCE ADVISORY COUNCIL'S NEW MEMBERS

We need you on the RAC!

The BLM is seeking public nominations for five open positions on its Alaska Resource Advisory Council (RAC). Individuals may nominate themselves or others to serve on an advisory council. Deadline for nominations is March 25, 2014.

The BLM-Alaska RAC has five positions open in the following categories:

Category One (2 positions): Representatives of organizations associated with energy and mineral development, transportation or rights-of-way, off-highway vehicle use, commercial recreation and public land ranchers.

Category Two (2 positions): Representatives of nationally or regionally recognized environmental organizations, archaeological and historical organizations, and dispersed recreation activities.

Category Three (1 position): Representatives of state, or local elected office; representatives and employees of a state agency responsible for the management of natural resources; representatives of Alaska Native Tribes, organizations or groups; representatives and employees of academic institutions who are involved in natural sciences; and the public-at-large.

TO QUALIFY: Nominees must be Alaskan residents. All nominations must be accompanied by reference letters from any represented interests or organizations, a completed RAC application, and any other information that speaks to the nominee's qualifications. Applications will be judged on the basis of their training, education, and knowledge of the council's geographic area.

Download an application at: http://www.blm.gov/ak/rac or contact Thom Jennings, RAC Coordinator, at tjenning@blm.gov or (907) 271-3335.

Secretary of the Interior Sally Jewell has made appointments to fill four vacancies on the 15-member BLM-Alaska Resource Advisory Council (RAC), which advises the BLM on public land management issues.

The BLM's RACs, composed of citizens chosen for their expertise in natural resource issues, help the Bureau carry out its stewardship of 245 million acres of public lands. Appointments are for three years. The BLM-Alaska RAC meets at least twice a year, and will meet next, April 23-24 in Fairbanks.

E. Barrett Ristroph (Anchorage): Environmental Organization Interests

Barrett Ristroph is a lawyer and planner currently working on Arctic lands issues for the Wilderness Society. She previously worked on various planning and legal issues for the North Slope Borough. She has researched and published on a wide range of topics, including climate change, comparative environmental law, Arctic shipping, oil and gas, and the integration of traditional knowledge with Western science.

Kathryn Martin (Glennallen): Transportation and Rights of Way Interests

Kathryn Martin is the Senior Vice President for Ahtna, Inc. Raised in Mentasta Lake, she has lived in Tazlina for the last nine years. She has an Associate's degree in Tribal Management and a Bachelor's degree in Rural Development. Land and transportation issues are very important to her whether it be for private and/or public. Kathryn has worked the last nine years in partnership with the BLM, National Park Service, and state agencies on land and transportation issues.

Warren Olson (Anchorage): Dispersed Recreation

Warren Olson has lived in Alaska since before Statehood. With the exception of the Aleutian Islands and South of Yakutat, he has subsisted by hunting and fishing throughout Alaska. Warren has been involved with a myriad of outdoor oriented councils and boards since 1976. Now retired, he remains active. He is currently a board member of the Citizens Advisory Group on Federal Areas and a trustee with the Alaska Outdoor Council and the Alaska Fish and Wildlife Conservation Fund.

David Brown (Anchorage): Energy and Minerals Interests *(REAPPOINTED)*

David Brown is a land manager for ConocoPhillips in Alaska. His work includes acquiring acreage for oil & gas exploration on BLM-managed and State of Alaska lands. He has been a member of the BLM-Alaska RAC since 2010 and was recently appointed to a second three-year term. David worked for Conoco and ConocoPhillips throughout the U.S. and in the Netherlands and Nigeria. He has a Bachelor's degree in Business Administration from Oklahoma State University and a Master's degree in Management from the University of Virginia. His skills and experience include international development, negotiation, global government relations, finance, and the third world.

—Thom Jennings
Public Information Officer
BLM Alaska State Office

BLM-Alaska Resource Advisory Council http://www.blm.gov/ak/rac

SUPER DOGS!

REDEFINING DOG PHYSIOLOGY AS ATHLETES

Dog mushing is Alaska's official state sport and the Alaskan malamute its official state dog, but it is Oklahoma State University veterinary sports medicine professor and veterinarian Dr. Michael Davis who is redefining what Alaskan's know about their dogs.

On March 12, Dr. Davis came to the BLM Campbell Creek Science Center to share his decades-long research on "Working Dogs – From Arctic Racing to Bomb Detecting in the Afghan Desert," as part of the Science Center's Fireside Chat evening lecture series.

Davis says dogs are incredible athletes, outperforming other mammals in extremes of altitude and temperature, and adapting rapidly to sustained strenuous exercise beyond human capacities. Dogs have enormous aerobic capacity, that doubles to 300 ml/kg/min ratio of volume of oxygen to body weight (VO2) per minute for conditioned sled dogs, up from 150-175 ml/kg/min for untrained dogs. In comparison, Lance Armstrong's highest VO2 during the extreme Tour de France bike race was only 82 ml/kg/min.

During the Iditarod or Yukon Quest races, Davis says sled dogs require 12,000 calories a day, equal to about 24 Big Mac® hamburgers. Humans, weighing two to three times more than the dogs, struggle to consume more than 5,000 calories a day. Dogs go from using their reserves to fine-tuning their metabolism in less than 48 hours, gaining fitness that fast. On their first day of running, conditioned dog's metabolism changes are similar to human endurance athletes – depletion of muscle

Karen J. Laubenstein

About 175 folks attended Dr. Michael Davis's fireside chat at the BLM Campbell Creek Science Center and gained a deeper understanding of Alaska's super dogs.

energy reserves; increased stress hormones; cellular breakdown in proteins, lipids, and DNA; and oxidative stress. In dogs, however, with subsequent consecutive days of exercise at the same intensity, these breakdowns are reversed. Within four days after exercise begins, the dog's metabolism returns to the same level as before the race began. Davis explains his research also helps mushers know to give their dogs an antacid early in the race to avoid ulcers that can occur (and can be fatal), and how the risk is less as the race goes on.

As Davis explains, dogs don't just continue to perform, they perform a lot better. "There's a good argument that nothing prepares a dog better for a 1,000-mile race than a 1,000-mile race. They can do it indefinitely with trail and food. They get tired, but they don't fatigue in the chemical sense." Davis demonstrated infrared photos showing how dogs deal with heat build-up, through their face and paws, and how their heat build-up changes over the course of strenuous daily exercise, such as running the dog sled races. This is why dogs rub their faces in the snow when they stop running, to help cool off.

Davis used his research on arctic dogs to apply to his work with the U.S. Marine Corps in developing better-conditioned IED-sniffing dogs for use in Afghanistan.

For his research, Davis worked with this year's Yukon Quest

Karen J. Laubenstein

Oklahoma State University veterinary sports medicine professor and veterinarian Dr. Michael Davis

International champion Alan Moore and his wife, 2nd Place Iditarod Sled Dog Race champion Aliy Zirkle and their SP Kennel, as well as 4-time Iditarod winner Martin Buser and his Happy Trails Kennel. The mushers say Dr. Davis has made a difference in their understanding and care of their dogs.

Public radio station KSKA in Anchorage audiotaped and broadcast the presentation on their "Addressing Alaskans" program. You can listen to the edited version here http://www.alaskapublic.org/?s=addressing+alaskans

FRONTIERS FLASHES

News from around the state and our field offices

A Relic of Alaska's Mining Past Roars to Life

In 2009, miners who were cleaning up an old mining claim near Coldfoot, Alaska, donated a 1920s-era churn drill to the BLM. The drill, rusted and overgrown with willows, might not have looked impressive to many, but BLM Central Yukon Field Office Archaeologist Bill Hedman found that it was surprisingly intact.

In the early 20th century, gas-powered churn drills like this one had offered Alaska placer miners a major technological advance, allowing them to dig a test hole through frozen gravel much more quickly and efficiently than with picks and shovels. Hedman decided this piece of Alaska mining history warranted some fixing up…

By 2011, Hedman had arranged to have the drill transported 10 miles down a creek and then 250 miles down the Dalton Highway to Fairbanks. There, machinist and antique engine expert John Howe worked off and on for the next two years to reconstruct the drill, fabricating new parts when necessary. For example, the drill needed a left lay rope to keep the tooling taut against the drop and pull of the hoist. Such ropes are now rare, so Howe had to make his own. He also milled and cured the Douglas fir timbers on which the rest is now mounted.

In September, Howe fired up the churn drill for the first time in many decades, possibly since the 1960s or 1970s. The past roared back to life as the LeRoi 2-cylinder engine caught quickly. Howe adjusted a lever, and various wheels and belts spun and jiggled. He pulled another lever, and the chisel bit rose and dropped to the ground over and over, just as it had for the early miners. The magic moment was captured in this two-minute video: http://bit.ly/HuSZmd.

This spring, the churn drill will be fired up again to enjoy a brief moment in the Fairbanks spotlight before joining a replica prospector's cabin and other artifacts in an outdoor gold-mining display that the BLM is constructing near the Arctic Interagency Visitor Center in Coldfoot. Miners in both the Coldfoot area and Fairbanks have been active supporters of the new exhibit, which is scheduled to open in a few years.

Story and photos published on Tumblr by Bill Hedman and Lisa Shon Jodwalis, Central Yukon Field Office, BLM-Alaska

Craig McCaa

Watch it at http://bit.ly/HuSZmd.

BLM fulfills final ANCSA entitlement for Qanirtuuq Village Corporation

Thom Jennings

Bud C. Cribley signs and presents Pauline Matthew with patent.

The BLM made a final land transfer in February to Qanirtuuq, Inc. to complete the corporation's land entitlement under the Alaska Native Claims Settlement Act of 1971 (ANCSA). Qanirtuuq, Inc. was formed under ANCSA to represent the Alaska Native village of Quinahagak.

The signing ceremony was held in Anchorage. Qanirtuuq, Inc.'s corporate board president Pauline Matthew and manager Warren Jones accepted the village corporation final patent for 2,434.54 acres. June McAtee, Vice President for Land and Natural Resources for Calista Corporation, accepted the regional corporation's patent for the subsurface estate. BLM-Alaska State Director Bud C. Cribley signed both land transfer documents.

Qanirtuuq, Inc. received its first conveyances under ANCSA from the BLM in June, 1980. With this patent, Qanirtuuq, Inc., received just over 130,564 acres of land surrounding the village of Quinhagak, situated on the east side of Kuskokwim Bay.

BLM-Alaska Branch of Pipeline Monitoring Moves to Downtown Anchorage

The BLM Branch of Pipeline Monitoring has moved from midtown Anchorage to the James M. Fitzgerald United States Courthouse and Federal Building at 222 W. 7th Ave. in downtown Anchorage.

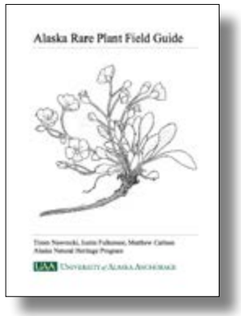
"This move will enable the Branch of Pipeline Monitoring to more easily share the resources of other BLM programs, creating efficiencies and reducing operating costs," said BLM-Alaska State Director Bud Cribley.

The Branch of Pipeline Monitoring works with the State of Alaska and other federal agencies to monitor environmental protection, pipeline system integrity, public and worker safety, and regulatory compliance on the 800-mile Trans-Alaska Pipeline System.

The main telephone number for the BLM Branch of Pipeline Monitoring remains 907-271-1309. The new mailing address is:

BLM Branch of Pipeline Monitoring
222 W. 7th Ave. #13 Anchorage, AK 99513-7504

Identifying Alaska's Rare Plants



Ever wanted to find out what that rare plant is in Alaska? The Alaska Rare Plant Field Guide: *The Taxonomy, Conservation Status, Distribution, Morphology, and Ecology of 80 Rare Vascular Plant Species in Alaska* (Tim Nawrocki, Justin Fulkerson, Matthew Carlson), produced in partnership between BLM and the UAA Alaska Natural Heritage Program, is now complete and on-line! The 2013 version is an update of the 1997 Alaska Rare Plant Field Guide by Robert Lipkin and David F. Murray. This guide addresses species of conservation concern, including most of the BLM-designated sensitive species. You can get the guide and its component pdf files at http://aknhp.uaa.alaska.edu/botany/alaska-rare-plant-field-guide/#content.

New Artist-in-Residence Program in White Mountains NRA

Based in the BLM-managed White Mountains National Recreation Area outside of Fairbanks, BLM-Alaska's new Artist-in-Residence (AiR) program provides artistic and educational opportunities to promote deeper understanding and dialogue about the natural, cultural, and historic resources on public lands.

The first Alaska AiR will spend April 14-18 at the Wickersham Creek Trail Shelter in the White Mountains. BLM-Alaska provides transportation between Fairbanks and the cabin, while the artist is expected to donate the use of a piece of artwork inspired by their time in the White Mountains to help promote public lands.

"We're hoping an artist's fresh perspective might help us shine more light on some of these local treasures like the White Mountains," Eastern Interior Field Manager Lenore Heppler says.

BLM-Alaska plans to eventually offer several residencies annually in different seasons and locations, including another in the White Mountains and a summer residency in the Fortymile region. Contact Craig Tanner at ctanner@blm.gov, or 907-474-2321 for more info.

Special Permit Fees Increase Take Effect

The BLM, in concert with the U.S. Forest Service, automatically adjusts the minimum commercial and assigned site fee every 3 years. This new fee schedule is effective until March 1, 2017.

As of March 1, 2014 Special Recreation Permit (SRP) Fee automatic increase took effect. The fees are as follows:

- The minimum annual SRP fee will increase by $5, to $105.
- The minimum assigned site fee will increase by $10, to $210.
- The "per person per day" fee for competitive events and organized groups will remain $5 per day.

"Extreme School" Reality TV visits BLM Campbell Creek Science Center

On Dec. 4, a BBC television film crew came to Alaska to film two British 13-year-olds visiting Anchorage's Catholic K-12 Holy Rosary Academy. As part of the "Extreme School" reality series, they videotaped an educational activity about winter survival and wildlife safety at the BLM Campbell Creek Science Center. The Alaska segment will air this spring in Britain.

North Slope Land Use Patterns and Subsistence Change Studied

It has been 30 years since the BLM last studied village-specific land use patterns on the North Slope. Stacey Fritz, BLM Arctic Field Office anthropologist/subsistence specialist, has spent several field seasons gathering modern data on these patterns. She is learning the years have brought rapid social, economic, and cultural changes to people living on the North Slope. As residents become more prosperous, their improved financial resources allow them to purchase tools to make subsistence activities quicker and more efficient. Travel has especially changed with the advent of four-wheelers (off-road vehicles), snowmachines, and larger and more powerful motorboats. Some residents secured Native Allotments within their community's larger use area, bringing private land ownership rules and regulations to bear on traditional land use. Stacey plans to update the reports required by Section 105(c) of the Naval Petroleum Reserves Production Act that governs the National Petroleum Reserve in Alaska. Those reports include accounts of Iñupiat dependence and livelihood, historic values, and activities to the land, and were produced in the 1970s and 1980s.

New National Petroleum Reserve in Alaska Working Group

BLM-Alaska held the first meeting of the new National Petroleum Reserve in Alaska (NPR-A) Working Group in Fairbanks on February 27. Nineteen members from North Slope communities, tribal organizations, and Alaska Native corporations gathered to adopt a charter, select John Hopson as chair and Howard Patkotak as vice-chair, and provide input on the full range of management issues and possible future development in the NPR-A, including pipelines and related oil and gas infrastructure. The group also assists the BLM in gathering scientific and traditional knowledge.

Serena Sweet

NPR-A Working Group Meeting in Fairbanks.

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BRINGING WILDLIFE LEADERSHIP HOME

Congratulations to BLM-Alaska's Sarah Bullock, graduate of The Wildlife Society's 2013 Leadership Institute. The Institute challenges and mentors promising early career wildlife professionals, culminating in an intensive, hands-on conference each year.

Sarah moved to Glennallen two years ago to serve as the BLM Glennallen Field Office Wildlife Biologist and Federal Subsistence Program coordinator. The Institute competitively selected Sarah as one of ten ambassadors from the United States and Canada.

"It was a real honor to be selected," Sarah explains. "I share [the Institute's] mission and goals to be a good steward within wildlife and natural resource management by upholding scientific integrity and mentoring the next generation of career professionals in the wildlife field."

Sarah feels the Leadership Institute was very rewarding. "I was able to advance my leadership skills and discuss formative research and management with colleagues from around the world! I challenge any Alaskan early career wildlife professional, whether in academia, research, or management, to apply for next year's Leadership Institute."

Sarah Bullock (front right), BLM Glennallen Field Office Wildlife Biologist/Federal Subsistence Program Coordinator seated with colleagues at the 2013 Wildlife Society Leadership Institute.

To learn more, visit www.wildlife.org/professional-development/leadership-institute.

—Marnie Graham
Public Affairs Specialist
BLM Glennallen Field Office