The Force of Science
Welcome to Frontiers!

BLM Alaska is one of the federal land managers for America’s Arctic. This means BLM staff are on the forefront of Arctic science and research. BLM Alaska’s Dr. Jason Taylor keeps us posted on Arctic research and monitoring efforts.

We’re pleased to share about yet another new polar dinosaur find from the Liscomb Bone Beds along the Colville River.

We’re offering tips on wood heating you might not know about, shared from our BLM Alaska Forester. You can also read about monitoring programs, sea squirts, and news flashes from around Alaska.

We hope you enjoy this issue of BLM Alaska FRONTIERS.

Karen J. Laubenstein
Editor

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Wood Heating Tips

While many people look forward to the smell of wood smoke in winter, it may not be healthy for everyone. Dense smoke may mean we are not being as efficient with our wood heat as we could be. Wood stoves and wood-fired boilers are most efficient when they can burn hot, and have enough air intake to burn gases contained in the smoke before the smoke releases up the chimney. To capture heat from these intense burn periods, an insulated water jacket large enough to fit around the stove or a large storage container with glycol, is very useful. If done in an insulated open loop system where there is opportunity for expansion without pressure build-up, the heat can be drawn off the storage tank for several hours before needing to refire the stove.

Dry seasoned firewood is the most efficient and least smoke producing wood to burn. A fuel with a moisture content less than 10 percent is best. To achieve a low fuel moisture it is best to cut firewood at least one year before you plan to burn it and store it under cover (even a blue tarp) in an open stack where air can flow through it. Using manufactured logs is also a good method to ensure the wood is dry.

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Always keep your chimney clean. Burning dry wood in a hot fire will reduce the build-up in the chimney. Check your chimney often to reduce the potential for a chimney fire.

— Eric Geisler, BLM Alaska Forester, contributed to this story
The Circumpolar Biodiversity Monitoring Program (CBMP; http://www.caff.is/monitoring) is an initiative within the Conservation of Arctic Flora and Fauna working group (CAFF; http://www.caff.is) of the Arctic Council. The CBMP is an international network of scientists, conservation organizations, government agencies, Arctic community experts and leaders who collaborate on comprehensive plans for monitoring the status and trends of Arctic marine, terrestrial, freshwater, and coastal ecosystems and species.

The CBMP works as a "network of networks," to harmonize monitoring efforts and data from many sources and across scales, disciplines, and jurisdictional boundaries in the Arctic. This helps the CBMP provide timely information to managers, policy-makers, and communities within the Arctic and globally.

BLM Alaska and the North Slope Science Initiative have been involved with the CBMP since 2010 and co-lead the program for the United States with the Kingdom of Denmark. BLM Alaska and NSI's active role in this international effort helps to ensure that BLM and other resource managers can leverage the efforts of scientists throughout the Arctic to better understand changes in local resources and to inform management decisions in the U.S. Arctic.

As a co-lead for the program, I, Landscape and Arctic Initiatives Coordinator for BLM Alaska, recently attended the meeting at Kirkenes, Norway February 2-4, 2016. The participants discussed many relevant resource management issues facing Alaska, including coastal and freshwater biodiversity monitoring; traditional knowledge and wisdom; Arctic and northern hemisphere goose populations; the Arctic Migratory Birds Initiative; Migratory invasive species; and mainstreaming ecosystem services.

Once the formal business of the meeting concluded, all participants were invited into a lávvu, a traditional Saami dwelling. The social-cultural gathering was hosted by the Saami Council and a number of local Saami reindeer herders. Saami are the indigenous people of Arctic Norway, Sweden, Finland, and western Russia. In the lávvu—a teepee-like structure—twenty or more guests from around the world sat on reindeer hides placed in a circle around a roaring fire and listened, learned, and tasted local foods. These foods included a variety of prepared reindeer parts most people would think exotic, such as reindeer checks, eyeballs, blood sausage, blood pancakes, and bone marrow. A few more familiar items included reindeer sausage and meatballs.

After introductions, participants sang along to traditional song, the jok, one of the longest living music traditions in Europe. Discussion topics included the CBMP, traditional knowledge and wisdom; Arctic and Migratory Birds Initiative; Arctic invasive species; and mainstreaming ecosystem services.

Such a rich cultural experience left me with a much better understanding and appreciation of the lives and challenges of Arctic indigenous people half way around the world. For those involved, the meeting reconfirmed the importance of the myriad of CAFF initiatives to management of the U.S. Arctic.

— Jason J. Taylor, Ph.D.
BLM Alaska Landscape and Arctic Initiatives Coordinator

Each field season, the BLM issues paleontological resources use permits for survey and limited surface collection or excavation to qualified paleontologists and researchers for paleontological research on public lands. This research adds to our understanding of Alaska’s distant past and how it relates to life elsewhere in the world long ago.

Along the Colville River’s ancient sediments in the Liscomb Bone Bed, about 300 miles northwest of Fairbanks and 100 miles south of the Arctic Ocean, lies a trove of fossils. The curator of earth sciences for the University of Alaska Fairbanks Museum of the North, Patrick Druckenmiller, says “this is the best place in the world to find polar dinosaurs.”

This is where researchers discovered the fossilized bones of the “ancient grazer,” Ugrunaaluk Kuukpikensis. Druckenmiller notes that “Ugru” means plant grinding, “Naaluk” means respectfully old, and “Kuukpikensis” is the Inupiat name for the area along the Colville River.

Nearing the end of the Mesozoic Era’s Cretaceous Period (146-65 million years ago) when U. Kuukpikensis lived, river systems crossed the ancient Arctic flood plain and vegetation thrived during the sunny summer season. These herbivorous polar dinosaurs likely roamed in herds and used their hundreds of grinding teeth to survive on coarse vegetation. They grew to 30-feet long. It is also likely these dinosaurs were warm blooded, though that debate continues.

Druckenmiller says that “dinosaurs … living here in the Arctic were a completely different species from those who lived at the same time at lower latitudes… this suggests we had our own unique polar community up here.”

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An invasive marine invertebrate known as “marine vomit,” that can smother native species has been found within Whiting Harbor in Sitka. This non-native carpet sea squirt, Didemnum vexillum, (D. vex) is thought to be native to Japan. It was first detected in Whiting Harbor in 2010 as a result of a citizen-science-marine invasive species bioblitz. Tammy Davis, Alaska Department of Fish and Game (ADF&G), invasive species program lead, was concerned about the discovery as it was the base of operations for the scientific dive team. Researchers used GPS units to aid in navigating and diving to specific research areas. The divers set-up underwater domes to create a contained area where they could study the effects of biocide agents on the invasive D. vex. Domes were secured to the seabed with anchor chain and sandbags to ensure a good seal to avoid gaps that could dilute the biocides and allow the biocide agents to escape. A different treatment went into each set of replicate domes, including salt, chlorine, and cement dust. Control domes with no treatment were used for comparison. Research divers then returned three weeks later to assess the effects of the various treatments, and compare D. vex mortality by using underwater photos and grid measurements. Data analysis is still ongoing but it’s clear that salt and chlorine were more effective than cement dust for killing D. vex. The type of ocean seafloor (substratum) also appears to have a major influence on treatment’s effectiveness.

While ADF&G, SERC, and the BLM continue to review results of the initial study, they are pursuing funding and working to determine the most effective and cost-efficient next steps for scaling-up eradication efforts. Increasing the spatial scale of treatments is a critical next step that would make a bay-wide eradication attempt feasible. By working together, it looks good that the species will be contained and reduce the possibility of its spread and impact into broader areas of Alaska’s coastline.

— Tim Sundlov, Fisheries Biologist and Marnie Graham, Public Affairs, (BLM Glennallen Field Office). Tammy Davis, Invasive Species Program Coordinator (ADF&G), and Ian Davidson, Ph.D (Smithsonian Environmental Research Center) contributed to this article
BLM ALASKA ADOPTS NATIONAL AIM STRATEGY FOR MANAGING PUBLIC LANDS

While nationally the BLM is modernizing and mapping programs to more effectively and efficiently meet local, regional, and national information needs, BLM Alaska finds itself at the forefront of this approach. In January, nearly 50 BLM Alaska staff statewide converged in Anchorage for a workshop on the BLM’s new Assessment, Inventory, and Monitoring Strategy (AIM).

The AIM process will help the BLM collect quantitative information at a landscape level and in concert with other state and federal agencies. Each AIM-monitoring survey uses a set of core indicators, standardized field methods, remote sensing, and a statistically valid study design to provide nationally consistent and scientifically defensible information to track changes on public lands over time.

While the BLM’s mandate is to manage lands for multiple use, its core functions are to permit and monitor those uses in a way that maintains the health of the land.

BLM Alaska Director, Bud Cribley, offers this perspective. “In Alaska, the BLM’s mission requires that we monitor, understand, and manage sustainably the condition of over 70 million acres of land. Given our relatively small staff and expansive mission, it is clear that collecting data in a manner that serves multiple purposes at multiple scales is critical.”

The evolution on how the BLM approaches data collection will save staff time and taxpayer money. The AIM strategy effort for the BLM. In addition to expanding collection of aquatic resource data, the BLM will also focus efforts to gather data on terrestrial or earthbound resources through AIM. These efforts will help BLM and its partners meet regulations and standards for placer mining reclamation efforts and help managers discern impacts from other impacts such as drought, fire, or permafrost melt.

BLM Alaska has made significant strides in gathering baseline data for aquatic resources already. The Alaska Department of Environmental Conservation used AIM while sampling 26 sites in the National Petroleum Reserve in Alaska (NPR-A) last summer. The BLM and other agencies can now utilize this data at no additional cost.

This year, 2016, will mark an expansion of the AIM strategy effort for the BLM. In addition to expanding collection of aquatic resource data, the BLM will also focus efforts to gather data on terrestrial or earthbound resources through AIM. These efforts will help BLM and its partners meet regulations and standards for placer mining reclamation efforts and can inform ways to improve effectiveness.

“It’s also a tremendous opportunity to engage youth,” says Director Cribley. “Students at the University of Alaska Anchorage and Utah State University are already helping BLM Alaska gather systematic, baseline data. These opportunities position the next generation to become our future land and resource managers.”

AN ENGINEERING MARVEL: TRANS-ALASKA PIPELINE SYSTEM

When oil producers decided in 1969 to build and operate a pipeline to bring Alaska North Slope crude to market, it was the earth itself that presented some of the greatest construction challenges. Geotechnical engineers, geophysicists, and seismologists were among those who worked together to design and build a pipeline in a fragile arctic environment, over permafrost, through steep mountains, and across three seismically active fault zones.

In particular, frozen soil and earthquake risks presented some of the most complex challenges. A pipeline had never been built across permafrost before and no seismic standards for pipelines existed at the time.

It was a project of great ambition and as well as great uncertainty. The innovative solutions that were devised helped make the Trans-Alaska Pipeline System (TAPS) an engineering marvel and set new standards for pipeline design.

**Permafrost**

When developers not familiar with Alaska’s frozen soils initially envisioned building the proposed 800-mile pipeline, they anticipated the entire line would be buried underground. Until then, most pipelines were buried. But warm oil traveling through a buried pipeline could quickly thaw permafrost. When that happens, the ground would slump, causing serious problems for structures built on or within the soil. If buried in permafrost, the pipeline could sag and possibly leak.

Unstable permafrost along much of the 800-mile route ultimately resulted in a decision to elevate a total of 420 miles of the pipeline with support posts and cross beams. The support posts partially buried in the permafrost contain a device that helps maintain the ground in a frozen condition.

**Earthquakes**

Engineers designed the pipeline to withstand the effects of earthquakes. TAPS design allows for movement and flexibility of the line and the pipe supports. Among the most visible seismic design features are the Teflon “shoes” that sit beneath the pipe on the above-ground sections of the line. The shoes rest on steel crossbeams and can slide across the beams to allow for lateral movement during an earthquake.

The American Society of Civil Engineers awarded TAPS its Outstanding Civil Engineering Achievement Award in 1979. But perhaps the most powerful testimonial to TAPS engineering came on November 3, 2002 when a magnitude 7.9 earthquake occurred along the Denali Fault. The quake ruptured the earth’s surface for 209 miles. The prolonged, violent shaking triggered thousands of landslides large and small in Alaska and elsewhere, and caused water to slosh in lakes as far away as Louisiana. The rupture crossed beneath the pipeline, moving the earth 18 feet laterally and two feet vertically. The pipeline functioned as designed, moving across the slider beams, without breaking. There was relatively minor damage to the above-ground support system, but there was no damage to the pipeline itself and no release of oil. After inspections and repairs, the pipeline returned to operation two and a half days later. The hard work and careful calculations done by scientists and engineers many years before had paid off.

The BLM Branch of Pipeline Monitoring was established in 1974 by the Secretary of the Interior to oversee and monitor the activities related to the Trans-Alaska Pipeline System. The BLM works with other federal and state agencies to monitor environmental protection, pipeline system integrity, public and worker safety, and to ensure regulatory compliance.

— June Lowery and Maureen Clark
Public Affairs Specialists

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BLMers discussing AIM and the landscape-level approach at the January workshop.

(Marnie Graham)

BLM Alaska State Director Bud Cribley talks about the agency’s core functions at the statewide workshop.

(Marnie Graham)

A section of the Trans-Alaska pipeline is lowered into a ditch in the Brooks Range in August 1976, about 75 miles south of Prudhoe Bay.

(Marcus Raffini, Alyeska Pipeline Service Company)
Mapping Alaska for the First Time

Chris Neyles, BLM Alaska’s intelligence imagery and geospatial analyst, watches Senator Lisa Murkowski sign a commemorative poster for the Alaska Geospatial Council. Elevation data acquisition has exceeded the halfway mark (57%) over Alaska. The BLM is partner in the State/Federal collaboration making these important acquisitions possible. Accurate elevation data is critical to economic development, resource management and public safety in Alaska.

National Petroleum Reserve in Alaska Legacy Well Clean-up Efforts

On Feb. 17, BLM Alaska staff and representatives from the Alaska Oil & Gas Conservation Commission and Alaska Department of Environmental Conservation presented information on the progress of the Legacy Well Remediation Program at the BLM Campbell Creek Science Center in Anchorage. This month, plugging and remediation of four wells near Barrow and 11 wells at Cape Simpson is ongoing. It usually takes about four to six weeks to complete plugging and remediation of a site. Surface debris removal and soil sampling for all wells will occur during the summer complete. This sale benefits the state of Alaska. In accordance with the Alaska Statehood Act, 5 percent of the proceeds of the sale of public lands are paid to the state to support public schools.

BLM Director Kornze Finalizes Transfer of 1,500 Acres to North Slope Community

In March, BLM Director Neil Kornze finalized the transfer of approximately 1,500 acres of land to the Olgoonik Corporation in Wainwright. The transfer fulfills requirements in congressional legislation directing the BLM to sell the lands to the Alaska Native Claims Settlement Act (ANSCA) corporation.

“It is an honor to be in Wainwright to complete this important land sale to the Olgoonik Corporation,” Director Kornze said. “We have a critical obligation to support Alaska Natives and their communities.”

The lands, located within the National Petroleum Reserve in Alaska (NPR-A), are part of a former Distance Early Warning (DEW) line site no longer needed by the U.S. Air Force. The DEW line was a Cold War system to detect missiles and aircraft launched from the Soviet Union. The Department of Defense will continue to clean up the property until complete. This sale benefits the state of Alaska. In accordance with the Alaska Statehood Act, 5 percent of the proceeds of the sale of public lands are paid to the state to support public schools.

Kids Quilt Their Appreciation for “Water Discovery Days”

A 10-foot quilt hangs on loan above the salmon tank in the BLM Campbell Creek Science Center’s lobby, its vivid colors celebrating beavers, wetlands, and a memorable three-day fall “Water Discovery Days” field trip. Teacher “Mr. Robert” Stagg and his 27 students at Aquarian Charter School in Anchorage, choreographed a series of engaging educational experiences that later became motifs for the quilt. During Water Discovery Days, the students built aquatic insects out of craft materials to learn how the creek critters adapt to life in cold, running water. Next, they plunged their hands into Campbell Creek to find actual caddisflies (small moth-like insects having two pairs of wings), mayflies, and other macro-invertebrates. They learned about salmon species, mayflies, and then they created their quilt.

Steese National Conservation Vintage Poster

Get yours today from one of our Public Information Centers in Anchorage or Fairbanks.

Planning 2.0 Initiative Rethinking Land Use plans

With Planning 2.0, the BLM is improving its resource management planning process and revising existing regulations that guide its planning activities. These changes will improve the bureau’s timely responses to environmental, economic and social changes; will strengthen the involvement of other federal agencies, state and local governments, Tribes, and the public in the initial decisions leading to the development of BLM land use plans; and will address landscape-scale resource issues and use landscape-level management approaches to manage public lands. Find out more at http://www.blm.gov/westernplanning/planning/planning_overview/planning_2_0.html.

BLM Alaska Resource Advisory Council

BLM Alaska’s Resource Advisory Council (RAC), composed of citizens chosen for their knowledge of natural resource issues, provide advice on stewardships of the nearly 72 million acres the BLM manages in Alaska. The 15 Alaskans appointed by the Secretary of the interior to the council represent stakeholder interests in management and include conservationists, outdoor recreationists, industry officials, tribal leaders, state and local governments, academians, and industry representatives. There will be five vacancies to fill for appointments in 2017. Bud Cribley, State Director, said, “Our multiple-use mission of managing lands for recreation, mineral development and energy production must be done while conserving the land’s natural, historical and cultural resources. Our RAC members help provide valuable insight in helping us achieve that balance.”

For more information about the BLM Alaska RAC and its meetings, go to http://www.blm.gov/ak/rac.

2016 BLM IditaChat

This year’s BLM IditaChat literally meant talking online with the sled dogs! Among the most popular of the annual IditaChat online events, this year’s “Sled Dog Tales” IditaChat involved recreational, sprint, and competitive sled dogs and their mushers, who will be featured on Facebook Live on NNSA’s National Environmental Conservation page. The IditaChat provided an opportunity for teachers, students and interested participants to learn about Iditarod history, current and former mushers, and how the race impacts Alaska. The BLM’s national Pinterest account. One teacher said her students want to follow a dog in this year’s Iditarod Race instead of the musher after “talking” via the IditaChat with the dogs and learning about the Iditarod Trail. More information at: http://www.blm.gov/ak/Resources/IditaChat2016.html and photos are on Flickr: https://flic.kr/aHskt1sudS.

BLM’s national Pinterest account.
TV portrayals may be a long way from reality
Alaska – Living off the Grid

Reality TV often perpetuates the lure of Alaska — living off the grid or homesteading, while subsisting off the land. Sometimes people move to Alaska believing the land and its natural resources are available for the taking. In the early 1980s, Alaska had settlement programs. The State of Alaska no longer offers its homestead and homesite programs, but has a land program for Alaska residents to purchase. Lands must be sold, auctioned, or bid on at its appraised fair market value. The State of Alaska is the only government entity that consistently has land offerings for purchase. Rarely, a small town may want to repopulate and will offer land at a cost with specific requirements, the only recent such offering was in the town of Anderson in 2007.

Sometimes people use the word “homesteading” to refer to a subsistence lifestyle, living off the land.

Helpful Research links to get you started:

- History of Homesteading in Alaska

- State of Alaska Land for Sale
  http://dnr.alaska.gov/mlw/landsale/

Happy Home in Alaska, 1898.