U.S. Fish & Wildlife Service

Arctic National Wildlife Refuge

2012 Bulletin

Refuge receives memoir of 1973 trip

1973 traverse of Arctic National Wildlife Range by the Reconnaissance Platoon, Company E, 4th Battalion, 9th Infantry from Ft. Wainwright Army Base in Fairbanks, Alaska. (U.S. Army photos)

"Can we do this?" Finding the answer to that question prompted 22 men to volunteer for a month-long journey through the Arctic National Wildlife Range in 1973 (now part of Arctic Refuge). Donning standard-issue

army fatigues and 60-pound packs, they marched through unspoiled Arctic wilderness. The men seemed uncharacteristically orderly against a wild and varied backdrop, but they were used to maintaining structure in unstructured environments.

These soldiers were the Reconnaissance Platoon, Company E, 4th Battalion, 9th Infantry from Fort Wainwright Army

Base in Fairbanks, Alaska. Their mission was to gather in-the-field information about how well army personnel could deal with Arctic terrain and conditions.

Platoon Leader E. Frank Feichtinger describes this journey in a binder brimming with information about the 150-mile trip. He along with another platoon member, Tom Bird, an AM radio specialist, presented the binder to staff when they visited the Refuge's headquarters in Fairbanks. They wanted to pass on a piece of Arctic Refuge history along with a few pearls of wisdom about hiking in wilderness.

The binder is titled "Traversing Alaska's Brooks Range in the Arctic National Wildlife Refuge, 1973" and includes copies of original planning documents and reports such as supply lists, operation orders and after-action reports. Feichtinger's own words in the introduction explain why the trip was taken.

"The idea of conducting a patrol in the remote Brooks Range was hatched in the Fall of 1972," Feichtinger wrote. "I don't remember now exactly what brought our thinking to that area constituting the Arctic

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National Wildlife Range. Perhaps it was the area's remoteness and the challenge that would be presented in trying to operate there. Or perhaps it was the geographic availability of varied terrain over which a gamut of mobility methods could be employed and tested. But certainly it was that lure of adventure …"

The patrol stemmed from the need to know more about Arctic terrain and what it would take for the Army to operate there. The Vietnam War was ending and the military had a lot of experience in jungle-based operations and gear, but not Arctic-based operations. With the Cold War still looming and talk of the Alaska Pipeline being built, Fort Wainwright wanted to be prepared in case their soldiers were needed in the Arctic. Officers at Fort Wainwright formed Feichtinger's reconnaissance platoon and asked for volunteers.

Feichtinger wrote, "The collection of young men that would participate … were a diverse lot, even by today's standards. None were mountain climbers or adventurers, nor initially were they skilled in such endeavors." Most of the men were from cities, towns and other states, or territories like Puerto Rico. Only one member was born and raised in Alaska.

The soldiers planned to make a 300-mile journey from north to south in the Range across tundra, mountains, and rivers. Four caches of gear and food along the way would resupply the men. Air support would be available to deliver supplies, including the rafts, and to airlift people out if necessary.

The men traveled relatively light. Personal gear included one change of underwear, two changes of socks, dog tags, chapstick, foot powder, sunburn cream, mosquito repellent, shaving gear and sunglasses. The Army didn't have suitable mountain tents so soldiers snapped two rain ponchos together, but raising this into a tent was difficult in treeless areas because they couldn't find branches or logs to act as tent poles. They also brought other just-in-case gear such as M-14 rifles, smoke grenades and boot polish. Food was C ration meals and what was then the Army's first freeze dried ration called LRRPs (Long Range Reconnaissance Patrol).

Their four caches contained basic supplies and a morale boost. The first three caches each contained a case of soda and the last cache contained a celebratory case of beer.

The platoon made it through most of their trip except for the last leg which was river rafting. The air support delivered the rafts, but the rubber crafts started developing holes as they moved quickly over rocky river bottoms. Without enough boats, the platoon was picked up by CH-47 Chinook helicopters and taken back to the Base.

The soldiers had endured an amazing journey through the Range and carried on even when their feet ached and the cold chilled them through. Now, Feichtinger's words will carry their story further and it will endure just as they had.

If you were part of this platoon, E. Frank Feichtinger would like you to contact him. Email us at **arctic_refuge@fws.gov** to get his contact information.

Congratulations to award-winning staff members

Arctic Refuge is full of stars, but two staff members are shining especially bright. They received awards from the U.S. Fish and Wildlife Service to honor them for their contributions to conservation and the Service. The awards and winners are (drumroll please):

Award: **The 2011 Excellence Award for Innovation in Climate Change Science**

Recipient: **Botanist Janet Jorgenson**

Janet Jorgenson (USFWS)

Refuge Botanist Janet Joregenson received the ***2011 Excellence Award for Innovation in Climate Change Science*** for designing and implementing important climate change studies for Arctic Refuge and its scientific partners. Her newest initiative is investigating landscape change by comparing historical aerial photographs with current satellite imagery of sites throughout the Refuge. Her supervisor David Payer says, "Janet's dedication and innovative approaches are providing valuable insights into current climate-change effects and are establishing a baseline for detection of future changes."

Award: **The 2011 Recovery Champion**

Recipient: **Visitor Services Coordinator Jennifer Reed**

Jennifer Reed and Susanne Miller (USFWS)

Refuge Visitor Services Coordinator Jennifer Reed and U.S. Fish and Wildlife Service Polar Bear Biologist Susanne Miller received the ***2011 Recovery Champion*** award for their outstanding efforts in polar bear conservation. They work together to help communities surrounded by polar bear habitat avoid conflicts with polar bears. This reduces the potential of polar bears being killed due to safety reasons. Reed works especially close with the community of Kaktovik which is along the Refuge's northern coast, an area in polar bear habitat. Refuge Manager Richard Voss said he is happy to see Jennifer and Susanne's combined efforts so successful. "Conserving polar bears doesn't just involve polar bears," he said. "It also involves the people of Kaktovik who live near the polar bears. Jennifer and Susanne have formed partnerships with the Kaktovik community to make polar bear conservation sustainable."

Join others who "like" the Refuge

Arctic Refuge may be physically remote, but it's close to the hearts and minds of those who follow it on Facebook. More than 1300 people have "liked" the Refuge's Facebook page since it began in November 2010, and the numbers keep growing.

Wildlife Interpretative Specialist Cathy Curby established the Facebook Page as a way to connect people from all over the world to the Refuge and give them a sense of what it takes to manage such an amazing place. The Refuge's scientists, educators, managers and other staff help provide material for the weekly posts. Past posts include following a wildlife biologist as he tracked caribou, learning about a field camp's clever culinary creations, and viewing pictures of Refuge wildlife and landscapes.

To learn more about the Refuge and add a few comments of your own, join Arctic Refuge's online community at **facebook.com/arcticnationalwildliferefuge**. You'll "like" what you see and read!

Dragging the Hulahula

[This article follows a group of scientists as they float a Refuge river. The authors, Greta Burkart and David Payer, are Refuge scientists.]

Midnight sun illuminates the Hulahula River valley and Brooks Range. Note the low water level and erosion along the shore. (USFWS)

At 4 a.m. the midnight sun peaked through the lifting fog, revealing the Hulahula River Valley in the Arctic National Wildlife Refuge. It was early June 2011, just after snowmelt, and we were standing in a shallow, braided section of the river with flow inadequate to float our heavily loaded boats. The purposes of the Refuge include maintenance of adequate water quantity and quality to support fish and wildlife populations and habitats in their natural diversity, and to provide opportunities for continued subsistence uses.

Within the next 50 years, glaciers in this region, including those feeding the Hulahula River, may disappear. Changes to downstream ecosystems will likely include changes to flow, sedimentation, water chemistry, and aquatic food webs (Nolan et al. 2011). Our trip was to assess whether or not the Refuge will be able to meet its purposes without the meltwater that flows from these glaciers.

The Hulahula River originates within the Refuge on the north side of the continental divide, where it flows from glaciers in some of the highest peaks of the Brooks Range. In its nearly 100-mile descent, the Hulahula flows north from steep-walled glacial headwaters, through rolling foothills, across the Arctic coastal plain and into the Beaufort Sea.

Our first camp on the Hulahula was just downstream from the river's headwaters. Curious to check out the aquatic insects here, we picked up rocks from the riverbed. There was one stonefly on the first rock and another on the second. They were nemourids and may have been the same species that scientists collected here nearly three decades ago. Loss of glaciers may lead to changes in aquatic invertebrate communities and local extinction of some species, so this species may not be around in another 30 years.

The following day, a strong north head wind delayed travel to our next camp until 11 p.m. when the wind finally subsided. We launched and floated for less than 50 meters before we had to jump out and start dragging the boats. Our load was unusually heavy—in addition to personal gear and food, we had a few-hundred pounds of equipment, including meters, cables, winches, and nets. As we dragged and heaved this load across shallow riffles there were times when we questioned the need for so much gear. We knew, however, that we had the bare minimum necessary, given the varied circumstances we might encounter.

As the drag continued, we noticed an unusually turbid tributary flowing into the river from the east. On an unvegetated gravel bar, just downstream from the inflow, we found piles of uprooted shrubs, possibly deposited during a mass-wasting event that occurred along the turbid tributary we had just passed.

Thawing permafrost and ice have increased the rate at which these events occur in the Arctic. It is possible the uprooted shrubs would reestablish on this gravel bar or somewhere further downstream. In glacier-fed rivers, however, establishment of shrubs may be limited by meltwater flooding which, for now, may be increasing as these glaciers melt at an accelerated rate (Nolan et al. 2011). When the glaciers disappear the rate of shrub establishment may increase and lead to changes in channel size and shape, water chemistry, aquatic invertebrates, and other fish and wildlife communities. We pondered these possibilities as the drag continued.

We finally made it to our camping spot at 6 a.m.—it took us seven grueling hours to go six miles! We slept until the afternoon. Later that day we met a guided group who intended to float the Hulahula and climb a nearby peak, but were waiting for enough flow to do so. Eventually, they called it quits and left Alaska without setting foot in a boat or climbing a mountain. Each year, more than 100 people visit this river for guided or private float trips. We wondered how loss of glaciers will affect visitor use of the Hulahula and other rivers.

We spent what was left of the day measuring discharge, collecting samples, and wondering how many hours it would take to drag our load twenty miles downstream to our next site. The following morning we scrapped our plans to travel by river and arranged for air transport.

From the air we could see our sampling goal, its spring-fed tributaries and deep turquoise pools. These spring-fed sites stay open during winter and provide spawning and overwintering habitat for thousands of fish called Dolly Varden.

Dolly Varden (J. Carlson)

In the spring, adult Dolly Varden that overwinter here migrate to estuaries and marine waters where food is much more abundant. Later in August melting

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Caribou antlers may reveal Refuge's past

Orange flags dot the foggy landscape to mark where parts of caribou antlers have been found.(USFWS)

Two scientists are searching for where female caribou, called cows, gave birth on Arctic Refuge a century or more ago. It may sound like a difficult task, but pregnant cows leave an endurable sign behind that marks where they gave birth—their shed antlers.

Dr. Josh Miller examines a caribou antler found on the tundra. (USFWS)

Conservation Paleobiolgist Dr. Josh Miller is partnering with Refuge Wildlife Biologist Eric Wald to conduct a several-year survey for shed antlers in the areas of the Refuge where pregnant cows have traditionally given birth.

These cows are from the Porcupine Caribou herd, which currently contains more than 160,000 animals. Recorded data show where pregnant cows have given birth in the Refuge during the past 30 years. If Wald and Miller collect antlers that are older than 30 years, they will be able to extend the current data set. The collected antlers may also reveal how multiple generations of pregnant female caribou have been using the Refuge.

Dr. Miller, who specializes in retrieving historical ecological information from bones on landscapes, says the behavior of caribou and the nature of antlers make the shed antlers of pregnant cows good time and place markers.

Female cow caribou are the only female members of the deer family to grow antlers, and pregnant cows are the only members of the herd to shed their antlers near the place where they give birth. Because pregnant cows congregate in the same area to give birth, there may be thousands of shed antlers in areas where caribou calve.

While specific birthing sites vary each year, they are all contained within a general area called the calving grounds. This is why Miller and Wald know where to look. Pregnant cows from the same herd return to the same calving grounds each year. In fact, this is how you can tell herds apart. The Porcupine Caribou herd calving grounds cover almost all of the Arctic Refuge's coastal plain and a part of northwestern Canada.

Antlers can last for a long time which is what Miller and Wald are counting on. As a form of bone growth that grows and sheds annually, antlers can last up to hundreds of years in the cold, Arctic environment.

Miller developed the idea for the project while working on a post doc at Wright State University in Ohio. He asked the Refuge for its support, and the Refuge contributed funds as well as the assistance of a wildlife biologist. Miller will send the collected antlers to a lab to be radio-carbon dated for age.

So how successful will this project be? Wald says with a smile, "It's fitting that only time will tell."

Radio carbon dating of each antler will help identify its age. This is an old piece of the base (called the pedicle) of a female caribou antler, as indicated by the chalkiness and fracturing of the bone, and the lichens growing on it. (USFWS)

Refuge lends a helping feather to collaborative effort

Bird observers want to know why many shorebird species are experiencing population declines, but it's going to take a group effort to figure it out. That's why Refuge biologists are working with the Manomet Center for Conservation Sciences to study reproduction and survival of shorebirds nesting along a Refuge river delta.

This joint research is part of a larger network of study sites across northern Alaska and Canada that is coordinated through a working group of biologists and wildlife professionals known as the Arctic Shorebird Demographics Network (ASDN). Data from each study site will be combined to allow biologists to draw inferences about what is causing declines in these species. The study will continue through 2015.

What a shorebird biologist sees in the field ...

Biologist Megan Boldenow assisted the Refuge with its second year of the shorebird study when she helped locate more than 280 nests. She kept a daily journal of her observations and took photographs. Look at her pictures to see the nesting shorebirds she studied:

Almost all shorebirds nest on the ground. Earth-tone plumage helps this male Red-necked Phalarope blend in with surrounding grasses.

These Semipalmated Sandpiper chicks are precocial—they leave the nest and feed on their own within a few days of hatching.

When biologists find shorebird nests, they look for pips, pip stars, and cracks. These are types of chips that a chick makes to an eggshell before hatching. The Pectoral Sandpiper egg in the upper right-hand corner, has a pip star below the pip. Can you find it?

A benefit to being in the field is seeing a variety of wildlife. This Snowy Owl nest was in the same area as the shorebird nests. Owls are raptors. They use their talons and feet to capture food, unlike shorebirds which use their beaks.

This Red Phalarope chick, freshly hatched, was photographed during a routine nest check. After finding a nest, biologists return every day to document how many chicks hatch.

A Semipalmated Sandpiper gathers the brood. There are at least three chicks hiding under the white patch of chest feathers.

Phalaropes are an interesting bird: they do almost everything in reverse! The brightly colored females lay one egg a day until they have a complete clutch, then leave the cryptically-colored males to incubate the nest and brood the chicks.

Shorebirds lay at most four eggs. These Semipalmated Sandpiper eggs are all pointed at one end and fit snugly together, to keep them warmer in the harsh arctic environment.

Data entry can't be put off in this remote location. A bird biologist enters data into a laptop that is powered by solar-charged batteries.

Birds don't always nest in the most accessible places. Bird biologists spend all day hiking in hip waders. Although not the most comfortable footwear, hip waders allow biologists to wade across tundra ponds without getting wet feet.

Scientists double as Arctic sleuths

Two scientists are hot on the trail of carbon, wanting to know where it has been and who it has been with. That's because carbon, which is found in all life forms, can help the scientists determine if terrestrial life is an important food source for marine animals.

Ken Dunton and Jim McClelland, marine scientists from the University of Texas, are the investigating sleuths. They believe that terrestrial organisms along the coastal plain drain into rivers and flow into the Beaufort Sea where hungry marine animals await. Their investigative tool of choice is a microscope because the creatures they are looking at are small, some no bigger than the letters on this page.

To test their theory, the scientists and their graduate students are conducting a three-year study of food chains in Arctic Refuge's coastal estuaries. The researchers will collect plankton, invertebrates, fish, and other small ocean-dwelling animals, and then examine them to see what they've been eating.

The tell-tale clue about the marine animals' diet will come from the carbon in their bodies. Carbon is found in all life forms, and organisms acquire more carbon from the foods they eat. Carbon from terrestrial life exhibits different properties than carbon from marine life. A sea creature that eats a land-based organism will acquire carbon characteristic of land based animals. Once the carbon source is known, the scientists can determine how important terrestrial organisms are to the marine animals' diet.

The study will also provide insights into the dynamics of winter food chains in the Arctic. Dunton will be collecting samples three times a year, including during the formidable Arctic winter when temperatures can plunge to 50 below and scientists must collect samples from underneath the sea ice.

With two years of samples collected, and one more year of sampling to go, Dunton and McClelland will soon know, at least for the Refuge's estuaries, where carbon has been and who it has been with.

Marine Scientists Ken Dunton (left) and Jim McClelland (right) drill a hole in the Beaufort Sea ice while Kaktovik resident and snowmobile transporter Robert Thompson looks on. (University of Texas)

Jim McLelland gathers data from the sample site. (University of Texas)

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glaciers provide greater flows, allowing these fish to swim back to spawn and overwinter. Fifty years from now, if glacial meltwater ceases to flow, Dolly Varden may not be able to swim upstream from estuaries to this site. This would have a negative impact on subsistence users relying on Hulahula Dolly Varden as part of their winter diet.

Farther downstream, the Hulahula River crosses the Arctic coastal plain and forms a silty delta at the coast where thousands of shorebirds feed prior to migration. Loss of glaciers will reduce the volume of freshwater flow and the transport of glacial silt to river deltas. Compared to other deltas, those fed by glacier meltwater and its associated sediments support higher concentrations of freshwater invertebrates, an important food source for shorebirds (Nolan et al. 2011). Estuarine ecosystems will also be affected by loss of glaciers (see **Scientists double as Arctic sleuths** on this page).

We are now working with a team of ecologists and physical scientists to predict impacts of glacier loss on physical and biological conditions from headwaters to lagoons. Understanding and predicting these impacts will allow managers to make better-informed decisions and form critical conservation partnerships at local, regional and global scales.

This is a modified version of an article by two Refuge scientists. The article originally appeared in the River Management Society Journal *(http://www.river-management.org/)*

References

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Kids, try this wolf activity.

Make easy paper finger puppets where your fingers are the legs.

Cut out around each wolf finger puppet. At the bottom, cut out around each green line, and then cut out each green circle finger hole.

Color the puppets if you wish.

Then go to **http://arctic.fws.gov/wolfstory.htm** to read *A Family of Wolves*. This story is about a Refuge wildlife biologist who observes a wolf that tries to lead four pups to their mother. This "babysitter" wolf must figure out how to get the pups to follow it when the tiny pups encounter big challenges along the way. The babysitter wolf tries many different things. Read the story to see if it gets the pups to their mother.

You can recreate this amazing story with your finger puppets.

The "babysitter" wolf leads four wolf pups toward their mother. (USFWS)

This is a section of the wolf story you can recreate with your finger puppets:

...when the puppies get to the talus slope, they refuse to follow the babysitter wolf out onto the sharp and unstable rocks. The babysitter wolf notices they're no longer close behind it. Itself part-way across the talus slope, it turns to face the puppies, lowers its front shoulders, raises its hindquarters, wags its tail, and jumps up and down with its front paws extended, yipping. It looks to me like the babysitter wolf is indicating "Come on. Follow me. You can do it."

Read more at http://arctic.fws.gov/wolfstory.htm

Kids—Have a howling good time with the wolf finger-puppet activity on the other side of this page.

Two caribou get collars and names

Where in the world are Samantha Jane and Carlos?

That's what an Arctic Refuge wildlife biologist will be asking after two people won the "Name that Caribou" contest in random drawings. Betty Twitchell and Doug Bailey named two caribou that Refuge wildlife biologist Eric Wald placed satellite collars on this past spring. Wald uses the collars to track the movements of caribou within the Porcupine Caribou herd. The herd contains more than 160,000 caribou and uses Arctic Refuge as part of its home range. Twitchell and Baily, along with the rest of us, will be able to follow the seasonal movements of "their" caribou online at **www.taiga.net/satellite**.

Each caribou naming contest raised awareness about a different aspect of the Refuge. Elementary school student Betty Twitchell entered her name "Carlos" at a U.S. Fish and Wildlife Service booth where people learned about Refuge Information Technicians (RIT). RITs are the liaisons between Alaska's National Wildlife Refuges and the Native communities that live within or near the Refuges. The booth was at the Alaska Federation of Natives (AFN) Convention, where delegates from Native tribes and communities across Alaska and the United States came to discuss current events and issues.

Doug Bailey entered his name "Samantha Jane" at a visitor center in Coldfoot, Alaska that educates people about Arctic Refuge and other public lands along the Dalton highway. He stopped by the Arctic Interagency Visitor Center (AIVC) for a program that a Refuge staff member was giving about caribou. The AIVC is a partnership between the National Park Service, U.S. Fish and Wildlife Service, and the Bureau of Land Management.

Betty Twitchell holds up her winning entry, naming one of the newly collared caribou "Carlos." (USFWS)

Refuge biologist Eric Wald places a new satellite collar on "Carlos," a female caribou in the Porcupine Caribou herd. (USFWS)

Smokejumpers, the stars, and a Wild and Scenic River benefit from a 13-year-old's dream

Smokejumpers removed two 450-pound NASA research rockets from a remote, designated Wild River corridor. Quick, creative teamwork got the job done—but it might never have happened unless set in motion by a boy's dream.

Little did he know it, but Bremner, a thirteen year-old boy living in a tiny community nestled in the foothills of the Brooks Range Mountains, laid the ground work for this unanticipated project to be a success. Being neighbors to the Arctic National Wildlife Refuge, Bremner and his family visit the Refuge frequently. After discovering rocket launch debris scattered along a favorite river, his initial fascination with the rockets fit with his new interest in astronomy. Over time this fascination turned to discomfort when he realized that these rocket parts were debris left by the NASA-contracted Poker Flat aerospace research facility to the south, and that the accumulating rocket debris on the Arctic Refuge was affecting the wilderness landscape he loves.

To help Bremner think through his conflicted feelings between excitement about the rocket research that NASA does, and disappointment about that work's effect on Refuge lands, the family considered a volunteer clean-up effort. They got in contact with Arctic Refuge to see about removing the rockets on their next family camping trip. Arctic Refuge, always seeking to protect its pristine landscapes, was eager to see the debris removed.

NASA, the aerospace research facility, Refuge staff, and Bremner's family began to strategize the logistical challenge of cleaning up the debris when they learned that Bureau of Land Management Alaska Fire Service smoke jumpers could be available to help out. Because of Bremner, the stars aligned quickly to efficiently and economically remove the rocket debris from the family's treasured river, one of the Refuge's Wild Rivers.

The firefighters were equally happy to stretch their legs after a long, slow wildfire season. In order to help preserve the wilderness landscape, where use of helicopters is generally prohibited, they got the job done the old-fashioned way, by hand, rather than using the mechanized boost of a helicopter. Their efforts helped to maintain the wild character of the vast landscapes for which Arctic National Wildlife Refuge is renowned.

On a glorious early August afternoon, Bremner's parents provided logistical support by coordinating work teams and flights, and eight smokejumpers floated down to the bush plane landing area closest to the rockets. They met a Refuge pilot there who coordinated the rocket extraction. After packing their parachutes and making camp, the smokejumpers spent two days locating, sawing into manageable pieces, and hauling the rockets to the landing area. With the rocket pieces strapped to their backs, they returned to camp late the last night, and despite sore feet and backs, they all donned smiles. One of them even remarked that this hard work was the highlight of his summer!

Who could ask for more? Bremner got one of his treasured places cleaned up, the smokejumpers enjoyed some field time, and the Fish and Wildlife Service maintained the wilderness landscape within a Wild River corridor. Thanks to everyone who helped make this project possible, and especially to Bremner, who knows that it's worth dreaming big and shooting for the stars!

For more information about this project, please contact Arctic National Wildlife Refuge Visitor Services Coordinator Jennifer Reed at Jennifer_reed@fws.gov or at (907) 455-1835.

[Thanks also to staff from NASA and Poker Flat Research Range, who removed additional rocket parts from the Refuge.]

Carrying rocket debris across the tundra from the clean-up site to the landing strip. (USFWS)

Research provides opportunity for outreach

Marine Scientist Jim McClelland teaches students how to seine. (USFWS)

They traveled aboard a research vessel, collected and examined aquatic organisms, and discussed Abyssal Plains and thermoclines. This may sound like a group of scientists, but it was a group of students from Kaktovik, a small island village on the northern edge of the Refuge. The students attended a one-week summer science program that a marine scientist created and funded through his research grant to study marine food webs along Arctic Refuge's coastline.

Dunton is a professor at the University of Texas and has been studying Arctic marine food webs for about 30 years. Throughout that time he has become acquainted with the rural village of Kaktovik which is within Arctic Refuge and near one of his research sites. Whenever Dunton visits Kaktovik, the local children pepper him with questions about what brings him to their part of the world.

Dunton decided to answer their questions with a one-week summer science program. He used funds from his National Science Foundation grant to start a camp in 2009 with a handful of students in small quarters. Since then, the program has grown to 15 students and moved to a larger venue. The program has a lot of partners including Arctic Refuge, Harold Kaveolook School, and Friends of Alaska Refuges.

Dunton has expanded his outreach efforts to employ several high school youth this spring and summer to help him collect samples for his research. He believes that it is important to show youth future career possibilities as well as involve them in the research that is happening in their own backyard – the Arctic Refuge.

Do you know what a duodenum is? Students found out as they tried to locate it during a shark dissection. The Kaktovik Summer Science Program had many hands-on activities like dissections that kept students engaged. As one student said, "I liked the fun way that you guys taught us things. It didn't feel like learning but we know a lot more now than before the camp." (University of Texas)

Science program participant investigates an owl pellet. (University of Texas)

Arctic Refuge Briefs

Biologist conducts sheep survey

In early June, 2012, Refuge wildlife biologist Eric Wald conducted a ground-based Dall sheep survey in a western portion of the Refuge to determine lamb production. Estimated lamb:ewe ratio was 62 lambs per 100 ewes, which is higher than the long-term average and indicates a good production year. In mid-June, 2012, an aerial sheep population survey was conducted in the northern section of the Arctic Village Sheep Management Area. This area, which includes the Cane and Red Sheep Creek drainages, was recently closed to sport hunting. The results of this survey yielded a similar population estimate to that obtained in the last survey in 2006. It appears that the sheep population in this area is stable.

Botanist creates new monitoring site

Refuge botanist Janet Jorgenson started a long-term monitoring project of ice wedge polygons in the northern part of the Refuge. These polygons form when summer melt water seeps into vertical cracks in the permafrost and then freezes during winter. The cracks widen each winter, and the ice wedges become larger until the landscape, when viewed from the air, shows a polygon pattern. Jorgenson will visit twelve spots among the polygons every five years to see what changes are occurring to the land features and whether those changes are related to climate change.

Aerial view of polygonized ground (USFWS)

What comes after Arctic Refuge's Comprehensive Conservation Plan

As we near the end of the Arctic Refuge's Revised Comprehensive Conservation Plan (CCP) planning process, we will begin the step-down planning process. The CCP is the document that identifies the Refuge's goals and objectives, and guides Refuge management decisions for the next 15 years. After a two-and-a-half year process creating the revised CCP, it will be finalized later this year through a Record of Decision. Once this happens, staff will need to create step-down plans that elaborate strategies and implementation schedules for meeting the CCP's goals and objectives.

By early 2013, we will start work on three step-down plans. The Ecological Inventory & Monitoring Plan guides the collection of data for species of management concern. The Wilderness Stewardship Plan guides the preservation, stewardship, and use of the Refuge's designated Wilderness area. The Visitor Use Management Plan addresses visitor use issues identified during the CCP process and assesses visitor impacts and information needs. Managers may use education, site management, regulation, enforcement, and/or rationing/allocation to manage visitor use at Arctic Refuge. The Refuge will seek public input for the Wilderness Stewardship and Visitor Use Management plans.

Please visit our website at **http://arctic.fws.gov/ccp.htm** to find the latest information about these plans and how you can provide your comments.

A species of concern is new study's focus

A biologist who helped study Smith's Longspurs on the Refuge is now heading her own research project on the songbirds. Heather Craig, a Master's student at the University of Alaska Fairbanks, is studying the songbirds' nesting ecology. There is not much research on Smith's Longspurs, and Craig hopes her project will shed more light on these birds. The U.S. Fish and Wildlife Service recognizes them as a species of concern because they are vulnerable to human-caused land changes in the southern U. S. where they overwinter.

Refuge assesses visitor use on popular river

In response to public comments received during the Refuge's recent Comprehensive Conservation planning effort, and in recognition of the need for more focused visitor use management and Wilderness stewardship planning, Refuge Visitor Services Supervisor Jennifer Reed and Regional Planner Jeffrey Brooks recently assessed visitor experience conditions along portions of the Kongakut River drainage. A report describing their findings will be available to the public and posted to the Refuge's web site soon. Refuge staff hopes this report, along with other visitor use and recreation management information, will be useful to individuals seeking involvement in the future of the Refuge's visitor management and Wilderness character stewardship.

Evidence of past use. (USFWS)

Congratulations to YCC alumnus

Clifford David, a junior of Arctic Village and an Arctic Refuge YCC alumnus, has been named a 2012 Rural Alaskan Student of Mathematical Excellence by the Alaska Council of Teachers of Mathematics. Clifford distinguished himself in the Yukon Flats School District by working independently in Algebra II, although the course is not usually taught in Arctic Village. "This is a great achievement for Clifford and for the Yukon Flats School District. Clifford has worked hard and has excelled in mathematics. We are very proud of him," said Superintendent Lance Bowie in a press release.

YCC crew tests the waters. (USFWS)

Youth Conservation Corps work with biologist

A group of teens from Arctic Village learned how to sample and test local waterways as part of a federal work program called the Youth Conservation Corps (YCC). The student members spent a day with Refuge aquatic biologist Greta Burkart "to test the waters" of what it's like to be a scientist and help her collect information about waterways that are draining from the Refuge. In addition to learning about future career possibilities, YCC members helped with a number of projects relating to the visitor contact station that Arctic Refuge and Arctic Village maintain together at the village airport.

Manager's Choice awards announced

Refuge Manager Richard Voss had to make a tough choice. There were many good poster and literature entries for the Arctic Refuge "Managers' Choices" award which is featured in the 2013 Alaska Migratory Bird Calendar. Voss selected a poster and a piece of literature from school children living near the Refuge. And the winners are ...

Winning literature: Michael Klein, 6th Grade, Harold Kaveolook School, Kaktovik:

Spectacular shorebirds
Live in open places
Tall legs for running from the waves
Bill for catching food and cleaning feathers
Wings for flying long distances
Flying in flocks for safety
Migrating to spectacular places

Winning poster: Jewel Gilbert, 7th grade, Arctic Village School, Arctic Village:

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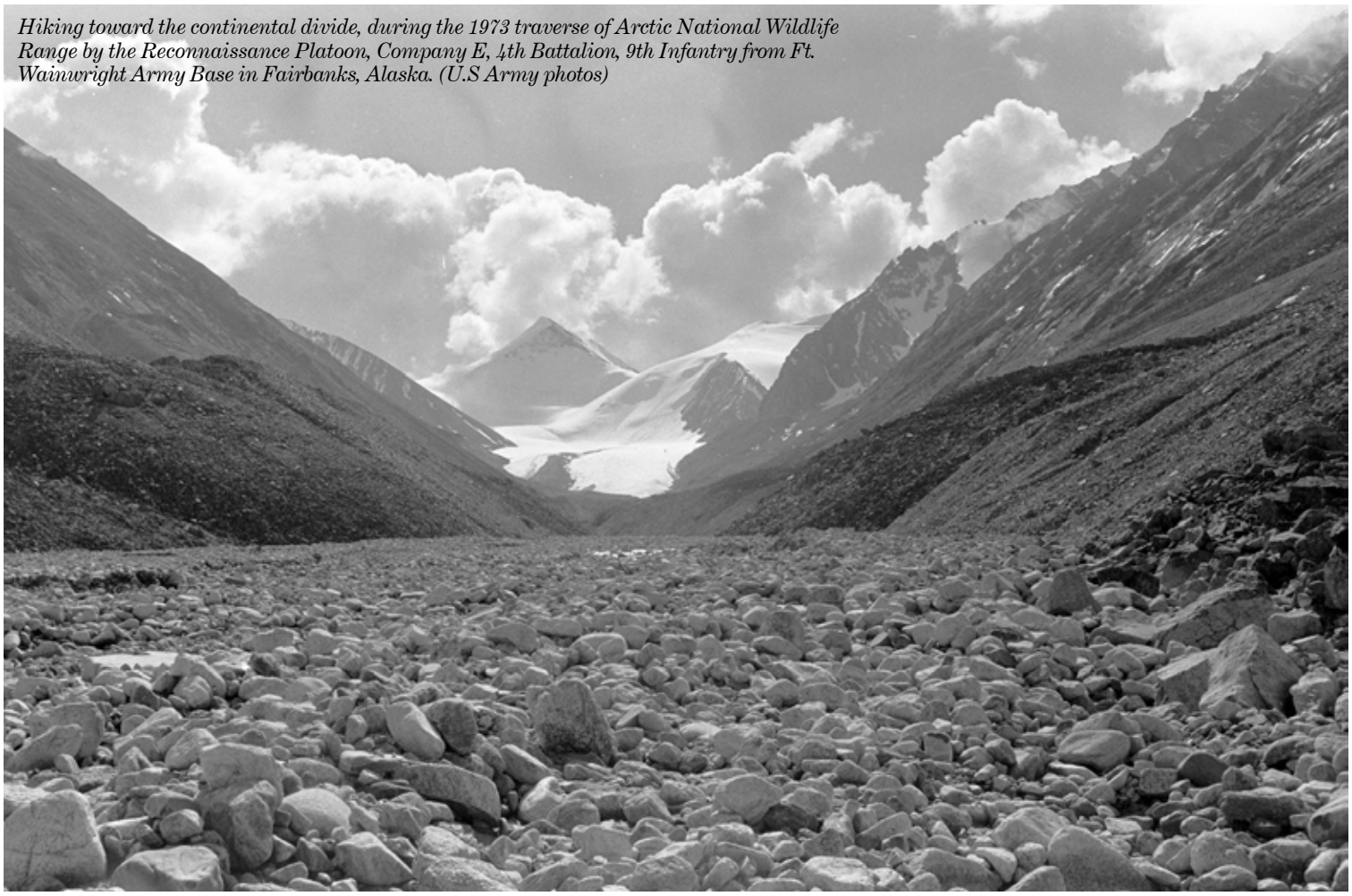

Hiking toward the continental divide, during the 1973 traverse of Arctic National Wildlife Range by the Reconnaissance Platoon, Company E, 4th Battalion, 9th Infantry from Ft. Wainwright Army Base in Fairbanks, Alaska. (U.S Army photos)