



# Eagle River Nature Center News

No. 50 Member Newsletter ~ Fall 2011 ~ Connecting People with Nature



## Word from the Director

Summer's over and Fall is beginning to feel like Winter. The cycle continues whether or not our bodies and minds are ready for it. Even the woodland animals are scampering frenetically getting their last minute "shopping" done before their food gets buried or disappears. They've had a bit more time this year to do this, with a balmy and sunnier September and October than in past years. At the Nature Center, this longer window of good weather afforded our trail volunteers extra time to complete some outdoor projects still on the list of goals.

Our seasonal volunteer changeover happened in September. Summer resident volunteers returned to Illinois, Florida, Arizona and Germany after a celebration to recognize their efforts. We said goodbye to Jane Jackson, Tom Conover and Max Zidek, as well as James (JD) Batove, our trail crew supervisor of the past three summers. Thanks to these individuals plus a regular team of local trail crew members, our trails and grounds were in the best condition I've seen them in years. I've listed just a few of their accomplishments and names on page 7. I encourage you to stop and thank them when you see them hauling gravel or splitting wood. A word of gratitude means a lot.

Of course, not only the trail volunteers were working this summer. The Center was open 7 days per week from May through September thanks to all our desk volunteers, nature walk volunteers and weekend program presenters. Even though most of their work is enjoyable, they have their share

*(continued on next page)*



Summer 2011 Eagle Scout projects completed at the Nature Center: *Top*, **Andrew Skroggs** and Troop 26 insulated the floor and walls of the educational yurt (with thanks to donations received from the Alaska Initiative for Community Engagement and AK Insulfoam); *Middle*, **Simon Kiehl** and Troop 210 built a larger woodshed for the cabin (Simon donated \$330 to the ERNC, too); and *Bottom*, **Marcus Gamble** built two benches and a wooden screen for the port-a-potty at the educational yurt. Many thanks to these young scouts for their outstanding work.

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## Word from the Director *(continued from front page)*

of unappealing and tedious tasks to complete. Daily, they clean the restrooms, collect the trash, organize the recyclables, vacuum and pick up all the crumbs the little ones have left. It's not very glamorous, particularly when careless or thoughtless visitors leave messes for others to deal with. Fortunately, those folks are the exception to the rule.

Every year our staff of four sits down to talk about who to select as "Volunteers of the Year". Each year, we have a number of people on that list. We do our best to simply go down that list year after year in hopes that we'll get to each of them. This year we are honoring two volunteers with many years of service to the Nature Center. They are Elaine Thomas and Scott Girard. If you've ever attended one of our astronomy programs, then you've probably heard Scott talk about Mars or enthusiastically present a Jr. Astronomer Certificate to a fledgling scientist. His good nature and smile is contagious, and his devotion to sharing his passion for astronomy is no less than remarkable. Elaine is Scott's counterpart in more ways than one, although if you'd see them standing side-by-side you wouldn't think that. Scott is 6 ft 5, whereas Elaine is a good foot shorter. But her smile and friendly nature is at the same level as Scott's. Elaine's association with the Nature Center goes back to the first days of the building's existence. Her husband, retired park ranger Dale Bingham, was instrumental in the design and construction of the Center in 1983. His "baby" during this intense time was hers by default. Nearly 30 years later, she still is nurturing it in all ways. Thank you, Elaine and Scott, for your passion and your devotion to future generations.

In closing, I'd like to fill you in on where we're at in our planning for the future of the Nature Center. The 3-year study and site plan development was completed last year. Public meetings were held at the Nature Center and other Eagle River community locations in 2010 which resulted in the selection of a site for a new facility. Those plans are included in the study and can be viewed online at the Alaska State Parks website. The plan is also posted inside the building and links to the study can be found on our website. The next step for Friends of Eagle River Nature Center (FERNC) has been to get a clearer picture of how much a new facility might cost to build and operate and to explore ways to raise future funds for its construction and operation. RIM Architects volunteered to help FERNC by providing pre-development building concept plan services free of charge. They're currently working with our building committee and staff to refine a preliminary concept that will give us the ability to get a realistic cost estimate. A building concept (please keep in mind that "pre-development" is the key word) coupled with a cost estimate will give us something concrete to discuss with you, our members and our community at large. On behalf of the Board, I'd like to thank RIM Architects for assisting us in this exciting, yet daunting venture. I doubt any of our staff or Board of Directors would want to take on all the extra work and burden of such a venture, if it were not something that we all felt was important for the healthy future of the Eagle River Nature Center. We'll keep you posted via our website as we move forward - slowly, carefully and deliberately.



Volunteer **Stacy Flagg** leads a summer nature walk.

Asta Spurgis

Visit <http://dnr.alaska.gov/parks> or [www.ernc.org](http://www.ernc.org) to keep abreast of our planning efforts for the future of the Eagle River Nature Center.



**JOHN TOENES**  
**August 21, 1947 -**  
**September 2, 2011**

We extend our deepest condolences to **Janet Toenes**, her daughter **Emily** and son **Justin** and their families, on the passing of their beloved husband and father, John Toenes. John died in September after a long illness. The family requests donations in his memory be sent to the Alzheimer's Disease Resource Agency of Alaska.

Janet Toenes served as the Treasurer of the Eagle River Nature Center from 1996-2006. John was an avid outdoorsman, who was seen often with Janet on the Nature Center's trails.



We extend our gratitude to **Keith Sander's** family, friends and co-workers who made generous donations to the Eagle River Nature Center in his memory. Thank you to **Rhonda Sanders** for designating the ERNC as recipient of these donations. Keith served on the Board of Friends of Eagle River Nature Center for 10 years until his passing on March 7, 2011. He is deeply missed by the volunteers, staff and Board of Directors of the Nature Center.

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**Changing of the Guard at the Nature Center**

Winter is right around the corner and it's time, once again to welcome our new winter help. **Michael "Gus" Gustafson** (*above left*) is back for a third season. You'll be seeing him grooming the trails, presenting programs and working at the front desk wearing his signature name tag - "Anything for the Nature Center". The name tag is well earned. Gus will do most anything, as long as it helps the community enjoy the trails and programs. We love you Gus!

New to the Nature Center are **Jaydee and Jerry Hernandez** (*photo right*). Jaydee and Jerry are from Southern California with a yearning to experience all that Alaska has to offer, including some snow! You'll see them at the front desk or cleaning up and recycling, plus moving the snow so that you can enjoy the lodge on Fridays and weekends. You'll also see them on astronomy nights helping our astronomers and the public. Welcome!



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 Larson, Brian  
 Leavitt, Russell  
 Lee, Chang  
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 Leonard, Jerry  
 LeProhon, Paul  
 Longman, Eric  
 Lutz, Andrew  
 Lyle, Monika  
 MacMillan, Mike  
 Maddamma, Nicole  
 Marshall, Will  
 Mattison, Brad & Mandy  
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 Nelson, Heather  
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 Wright, Laura  
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 Yoschak, Jodie  
 Young, Molly  
 Zak, Jonathan

*Names listed are  
 through 10/1/2011*



Your financial support helps us provide materials and handouts to our students and visitors; trail improvements and habitat restoration projects; and to help Friends of ERNC attain long-term financial sustainability. **Thank you to each of our renewing and new members.**

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				Roberts, Bruce
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				Rodgers, Monica <b>(cont next pg)</b>





Thank you to **SSgts Opitz and Ocasio** for organizing groups from **Elmendorf AFB** to help with a few trail projects (*pictured top left*) and to the young Elders of the Church of Latter Day Saints for helping out on Thursday trail crew days (*bottom left*). Trail crew supervisor **JD Batove** (*above center*) discusses options for a new trail with Chugach State Park Superintendant Tom Harrison and Trail Supv. Blaine Smith. JD piles rocks to create a firm foundation for a trail leading to a new yurt to be erected in June 2012.

## Summer Trail Work



If you had a chance to hike the trails this summer, then you're probably well aware of all the work that our volunteer trail workers accomplished. Just in case you didn't, here's an abbreviated list: The Lower Albert Loop Trail (section between the Beaver Deck along the creek paralleling the old "racetrack" roadbed) was leveled, widened, and the signage improved to make this less-traveled section more inviting and to enhance sightlines; a long, deep trench was dug from the trailhead down past the first Rodak Nature Trail intersection to improve drainage; dozens of wet sections along the trails were filled with gravel and rock to prevent ponding; damaged and/or old boardwalk boards were replaced; damaged signs were replaced; and long sections of trails were improved with skiing in mind (particularly sections in the vicinity of Rapids Camp and the Rapids Camp Yurt).

These are only a few of the many accomplishments of our community's volunteers. These hard-working individuals and organized groups put in over 750 combined volunteer hours between the months of May and September. **THANK YOU TO ALL OF YOU FOR MAKING THE NATURE TRAILS SOME OF THE BEST IN ALASKA!**

**Tom Conover and Jane Jackson** (*right*) worked on trails and at the information desk from mid-July through September. Many thanks to them for the incredible amount of work they accomplished in the short while they were with us.



**Max Zidek** (*above*) from Germany, helped with trail work and the front desk. His goal was to practice and improve his english language skills. He did that and even got to practice with some moose!

# Temperature Inversions in Eagle River Valley— Fun with Geophysics

Peter Q. Olsson, Alaska State Climatologist <http://climate.uaa.alaska.edu>  
olsson(at)aeff.uaa.alaska.edu

Yesterday morning (Oct. 12) was a clear, chilly, windless day in Eagle River Valley. At 9:00 AM that day, the temperature on the Eagle River at the mile 7.4 North Fork Eagle River access was a chilly 13° F. At my home— about 1 mile down-river, but about 500 ft *above* the valley bottom— the temperature was 26° F. This **surface temperature inversion** represents a **temperature lapse rate**  $\Gamma$  of about +2.6° F per hundred feet ( $\Gamma = +2.6$ ).

We all know that typically the temperature of the atmosphere *decreases with altitude*, at an average rate of about 3.2° F for each 1000 ft. in altitude ( $\Gamma = -3.2$ ). Mountain tops are usually much cooler than valley floors, right? But the situation that occurred in Eagle River yesterday was the opposite— temperature *increased* with height... hence the sign on  $\Gamma$  (that symbol is the capital Greek letter “gamma”) was a “+” and not a “-”. So, yesterday’s surface temperature inversion was *not* the usual state of affairs.

To understand surface temperature inversions (we’ll just call them **inversions** from now on) we use the physicist’s tried and true method of creating a **conceptual model**: take an incredibly complex system, throw away most of the hard stuff and just keep the parts that are important for the problem we want to understand— in this case inversions. Later, after we understand the easier case we will add the harder stuff back in as we return to reality. *Come on! Its Fun!*

## FIRST, A FEW PHYSICAL FACTS THAT REALLY MATTER FOR THIS PROBLEM:

- All bodies (e.g., human bodies, rocks, trees, sun, earth) constantly *radiate away* electromagnetic energy. For our purposes we consider the radiant energy coming down from the sun (solar energy), which we will give the symbol  $R\downarrow$ . The other **radiative flux** we need is the radiant energy coming up from the earth (longwave energy) which we will give the symbol  $R\uparrow^1$ .
- The atmosphere is a fluid (albeit a compressible one, unlike water).
- As a parcel<sup>2</sup> of the atmosphere cools, its density increases. Hence a parcel with a temperature of -10° F weighs more than a parcel at +10° F.
- The lowest several thousand feet of the cloud-free atmosphere does not really interact with solar radiation  $R\downarrow$  or outgoing longwave radiation  $R\uparrow^3$ . *This means that any radiative heat or cooling that happens occurs at the earth/atmosphere interface!*

## OUR IDEALIZED PHYSICAL MODEL:

Consistent with the facts above, we will assume a cloud-free atmosphere, at rest (no wind) and overlying a flat surface.

## HOW IT HAPPENS:

In the summer during *daylight hours*, the strong solar  $R\downarrow$  overwhelms earth’s outgoing  $R\uparrow$ , and parcels at the surface are *heated* as the ground warms from solar heating. The density of these warmed parcels de-

- 
1. The intensity of this “blackbody” radiation (measured here in watts per square ft.), as governed by the **Stefan–Boltzmann Law**, dramatically increases with temperature. The sun (surface temperature about 11,000° F) averages about 126 watts per square foot ( $R\downarrow$ ) coming down towards the earth at the mean earth-sun distance of 93,000,000 miles). Using a mean surface temperature in Anchorage of about 40° F gives us an outgoing intensity  $R\uparrow$  of about 19.5 Watts per square ft. Note the big difference that this outgoing radiation is measured right at the source of the body of the earth, whereas we are considering solar radiation originating a great distance from the earth.
  2. A parcel is notional “small” piece of atmosphere, a cubic centimeter, a cubic foot: *smallish* is what is important.
  3. This is not strictly true, because of greenhouse gases, but for the *time scales* considered here— hours to days— greenhouse gases don’t really come into play. They do for the climate change problem however.

creases, they become positively buoyant and rise (typically in plumes), and may even form summertime cumulus clouds. *At night*, there is no solar  $R_{\downarrow}$ , but outgoing  $R_{\uparrow}$  continues causing parcels at the surface cool and become denser in the process. In fact, a weak inversion may form. With the return of the sun at dawn, the cycle repeats itself. *This explains the diurnal cycle of warming and cooling we are all familiar with during the warm season.*

At our high latitude (about  $61.3^{\circ}$  N) wintertime is a lot like night time all the time. With long winter nights and low sun angle, solar  $R_{\downarrow}$  becomes weak to nonexistent. In fact, in the bottom of the deep Eagle River Valley, the Eagle River Nature Center (ERNC) gets *no direct sunlight at all* for about 9 weeks in the dead of winter. *Remember however that the outgoing radiation from the earth's surface  $R_{\uparrow}$  continues, day and night.* In the cloud-free atmosphere, radiative cooling keeps on chugging. The result is the development of an ever-cooler **boundary layer** at the surface of the planet— *voilà, a strong temperature inversion!*

## DENOUEMENT

Now, we understand the development of long-lived temperature inversions on *flat terrain* (think Tanana Flats, Yukon Flats, the Arctic Slope). However, Eagle River Valley is *not flat*. So, lets toss some mountains into our idealized model. Remember that the atmospheric cooling occurs *right at the surface*, where the atmosphere contacts the planet. Recall also that as parcels cool, they become more dense. If these more dense parcels form on a slope, they become negatively buoyant, and slide downhill in a very shallow **density current**. Eventually, they reach the bottom of the valley, where they tend to collect. *This mechanism removes the chilled air from the sloped higher elevations to lower elevations*, like valley bottoms or other low-lying areas, where it can collect in deepening pools.

**So, there it is: A mechanism for strong inversions to form in valleys.**

## NOW, LETS RELAX OUR ASSUMPTIONS IN THE IDEALIZED MODEL

Wind-free assumption: Wind near the surface results in mechanically-generated turbulence; mixing if you will. Even moderate wind can erode away a strong inversion in a few hours.

Cloud-free assumption: with clouds, the assumption that the atmosphere does not interact with  $R_{\uparrow}$  (or  $R_{\downarrow}$  for that matter) is *completely violated*. In particular, with clouds cover, the outgoing earth radiation  $R_{\uparrow}$  is absorbed and re-radiated downward. Without the ability for the surface to constantly cool by radiation, inversions cannot form, but instead are typically weakened.

## SOME FINAL OBSERVATIONS

- atmosphere in inversions is remarkably **stable**— it resists vertical mixing. Unlike warmed summer air that is positively buoyant and mixes upward, stable cold air sinks: *the inversion is self-sustaining*.
- Due to the stability of inversions, any pollution emitted in an inversion (for example ERNC's woodstove) does not mix out. In fact, it accumulates. This is a real problem in urban areas (e.g. Fairbanks).
- In extremely calm and stable conditions, inversions can get *exceedingly strong*. While winter camping at the ERNC cabin with my family, I have observed temperature differences ( $-28^{\circ}$  F, cabin vs.  $-7^{\circ}$  F, Nature Center) of  $21^{\circ}$  F in a vertical distance of 115 ft. ( $\Gamma = +19$ )!
- Inversions in the Anchorage bowl are usually short-lived, largely because we are close to a source of wind and cloudiness (the Gulf of Alaska). On the north side of the sheltering Alaska Range (think Fairbanks) inversions are the norm.
- Existence of many cryogenic phenomena (e.g. permafrost) that *depend critically* on the prevalent existence of an inversions may be radically threatened by a climate with more windiness and/or cloudiness.
- When winter camping, remember the possibilities of inversion existence or formation. Low-lying sites like the ERNC cabin and the River Yurt might be bad selections, whereas the ridge location of the Rapids Yurt might be better. Sometimes the trade-off must be made between windiness and cold temperatures.



## Shop at the Nature Center

It's that time of year when the trees have lost their leaves, the temperature has dropped and the snow has begun to fall. The white stuff reminds us that December 25<sup>th</sup> is less than two months away. Stay calm, because the Eagle River Nature Center has some great gift ideas.

We have handmade holiday ornaments from **Calico Cache**, beautiful Alaskan-made puzzles from **Eagle River Puzzles**, Alaskan soaps and lip balm from **Denali Dreams**, as well as Nature Center logo t-shirts and sweatshirts. These are just a few of the many great items for sale in our shop. Additionally, you can give the gift that keeps on giving by purchasing a gift certificate for a **Nature Center Membership**. Or how about treating a loved one or friend to a stay in our Public Use Cabin or Yurt? All you have to do is purchase a **Cabin/Yurt Rental Gift Certificate**. By doing your holiday shopping here, you are not only supporting the Nature Center, but you are also supporting many local artists and businesses as well!

Please contact me, Laura Kruger, if you have questions. Our shop's winter hours are Friday-Sunday, 10am to 5pm.

## BOARD MEMBER UPDATE

Many thanks to **Rob Sackerson** and **Pete Panarese** for serving on the Board of Friends of Eagle River Nature Center. Rob served on the Board from 2006 to 2010, providing great support with our annual auction and race. Father of three young boys, Rob has his hands full hiking and playing hockey with them and running Eagle River's Wedbush office. We thank him for his many years of service and wish him success.

Pete Panarese (*pictured right*) served on the Board from 2009 to 2011. His passion for Chugach State Park was always evident in the tasks he took on to help the Board. Over the last year, Pete has been active with the Chugach State Park Citizens Advisory Board, as well as traveling and preparing for adventures in Yellowstone and Grand Teton National Parks. He recently returned from a trip hiking and climbing five peaks over 9,500 ft., including Grand Teton. Way to go Pete!



**Patricia Jordan** (*pic left*) has served as the Secretary for the Board for many years. She is a former resident volunteer who came up from Florida and never left (like many of us), making Chugach State Park and the Nature Center her "home". Thank you Patricia for taking meticulous notes and transcribing them with such finesse.

We also wish to welcome the following individuals to the Board: **Andy Bickford, Dana Glessner, Eric Jenkins and Jason Longlet**. Thank you for serving on the all-volunteer Board of Directors of the Nature Center.

### Reminder about our Special Holiday Hours

The building will be **CLOSED on Saturday & Sunday, December 24 & 25 and December 31**. We will be open from Noon to 4pm on Sunday, January 1, 2012 (see "Save the Date" on back page for details). The building will be **OPEN Monday through Friday, December 26-30**.

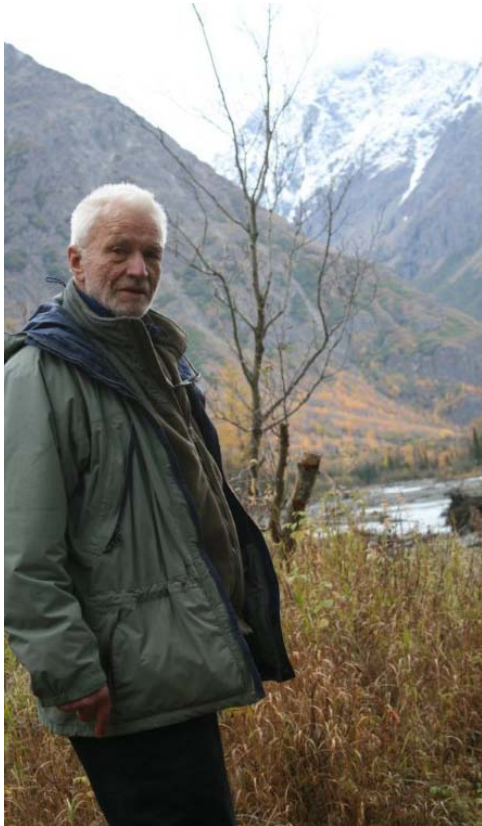
# THE GRIFFITH CHALLENGE

Dick Griffith Challenges  
Eagle River Nature Center Trail Users to  
Match His Contribution through March 4, 2012

**Eagle River Nature Center “Patron of the Trails” and legendary Alaskan adventurer will match up to \$5000** of your donation dollar for dollar in support of Friends of Eagle River Nature Center’s mission to provide connections to nature through excellence in education, resource protection and outdoor opportunities. Dick has become a legend by trekking across Alaska’s most remote wilderness areas - places without trails or handrails. Here at the Nature Center and in other Chugach State Park areas, Dick has worked hard for decades to keep trails free from obstructions for the enjoyment of all hikers. We are indebted to him for his volunteer spirit.

Take Dick’s challenge. Every dollar is important, so no donation is too small. **Every donor** will be included in a door prize drawing on March 4, 2012 at 2pm. The lucky person will have the privilege of **releasing a rehabilitated eagle** in the spring of 2012. Thanks to the **Bird Treatment and Learning Center**, this person will be able to coordinate a date and location with BTLC for a private release. We will also share a portion of the donations received through this Challenge with the BTLC.

Donors who contribute \$500 will receive special recognition on our “Giving Tree”. The tree will produce more **“leaves” with each \$500 contribution**. You have the option of dedicating your leaf to someone special or in memory of a family member or friend. Please take a look at our tree next time you come by. It’s right outside the back door.



The photo above of **Dick Griffith** was taken by author Kaylene Johnson. Ms. Johnson is working on a biography of Dick Griffith to be released in 2012. We’ll keep you posted!

**Mail this completed page with your check to:**  
**Eagle River Nature Center**  
**Griffith Challenge 2011-2012, 32750 Eagle River Road**  
**Eagle River, AK 99577**

Please make checks payable to the Eagle River Nature Center. If you would prefer to make a donation with a credit card, please call us at 907-694-2108 Fridays through Sundays or use our secure online donation form on our website at [www.ernc.org](http://www.ernc.org)

**Note to 2010-11 \$500+ donors:**

*Your leaves have been engraved and on the Giving Tree.  
Please stop by to take a look. Please notify us if any  
errors or omissions have been made.  
Many thanks to each of you.*

Name(s) \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone \_\_\_\_\_ Email \_\_\_\_\_

Amount of donation \_\_\_\_\_ Check # \_\_\_\_\_

Credit Card # \_\_\_\_\_ Exp Date \_\_\_\_\_

**If you are donating \$500 or more, please include the name of the person(s) you wish to include on your Giving Tree leaf engraving. Please keep dedications to less than 10 words please.**



**EAGLE RIVER NATURE CENTER**  
 October/November 2011 Member News  
 32750 Eagle River Road  
 Eagle River, AK 99577  
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**DICK GRIFFITH CHALLENGE** starts now!  
 See details inside.

**October-April 2012 Hours:**  
 Friday-Sunday, 10am-5pm or by appointment.

**IS MY MEMBERSHIP CURRENT?**  
 Just look at the address label above for your expiration date.  
 You can renew online, by phone or by mail.



## VOLUNTEER APPRECIATION

**Special Congratulations to our 2011 Volunteers of the Year: Elaine Thomas and Scott Girard** for their dedicated support and service to the Nature Center. Elaine has been volunteering at the front desk and providing interpretive design support for many years. Check out the new Nature Center maps she has designed, available at the front desk. Scott has been our astronomy series program presenter for over 10 years. Scott's love of the sky and children has been responsible for "infecting" dozens of children with an interest in astronomy. Elaine and Scott will be honored for their service at our annual Volunteer Appreciation Potluck in November.



## Save the Date!



Start the year with a fun, healthy activity. Join Alaska State Parks' "First Day Hikes" in Chugach State Park on New Year's Day.

Inspired by a nation-wide initiative to connect people to their State Parks, this program will be happening in all 50 states. The two hikes, one ¼-mile OR one 3-mile led by State Parks staff, are scheduled to begin at 12:30pm from the Eagle River Nature Center. Participants are urged to arrive half an hour early to register. There is a \$5 parking fee for non-members of the Eagle River Nature Center. Free coffee, tea, cocoa, and cookies for everyone.

Driving directions to and membership information for the Nature Center can be found at [www.ernc.org](http://www.ernc.org). Please leave your four legged buddies at home for this event, but bring a friend. Check our website <http://dnr.alaska.gov/parks/aktrails/> for more details as the date gets closer

