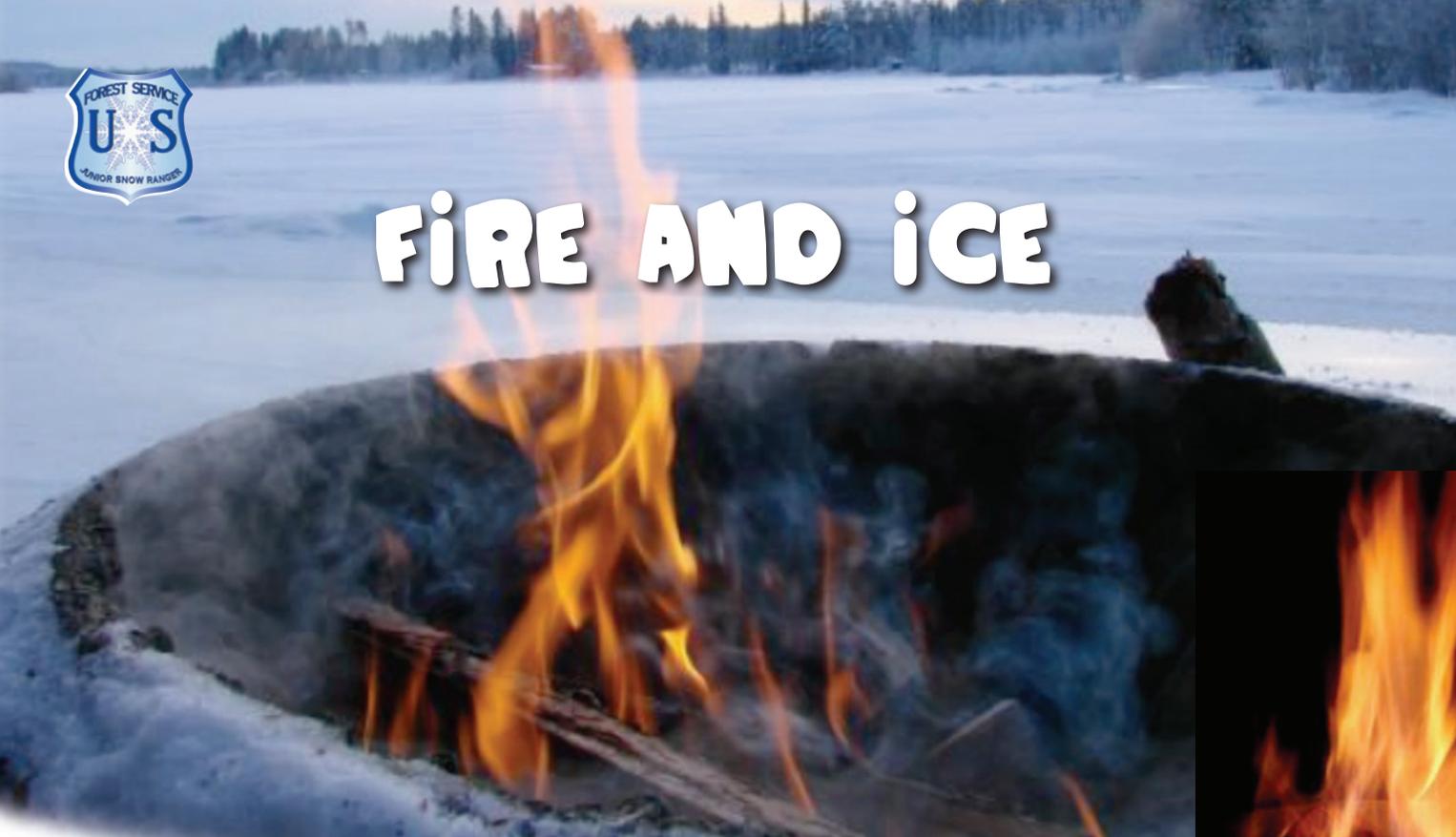




# FIRE AND ICE



## A Campfire in the Snow

A campfire in the snow is fire and ice. It looks beautiful and feels warm and wonderful on a cold day. But you and the adults who build the fire with you need to know these five things about a winter campfire.

1. Build your fire out in the open, away from trees. Heat from the fire will scorch tree trunks that are too close and melt snow on tree branches over your head. The melted snow will drip on you and put out the fire!
2. Use only dead and downed trees and branches for firewood. Do not cut live branches from trees. Even in winter, they contain a lot of moisture and will not burn.
3. To have a good base for your fire, either dig down to the soil (be sure it's not a peat soil) or put very large pieces of wood at the base. A good base is important—as the fire burns, the snow below it will melt.
4. To protect your collected dry firewood from moisture, cover it with a tarp.
5. Pile a lot of snow on the fire to put it out. Wait for the "hissing" to stop, stir the ashes with more snow, and be sure it is "dead out" before leaving.



*A wildfire in winter is fire and ice. The fire in this photo started in the fall, and even the moisture from winter snows could not put it out. That's why it is so important to make sure campfires are "drowned" and "dead out" before leaving a campsite. Some good came from this fire, though. It created habitat for waterfowl and other animals that live in this area.*

*Photo credit: Agassiz National Wildlife Refuge.*





# MEASURE THE SNOWPACK IN YOUR BACKYARD

## Phase 1

- Put a measuring cup outside and wait for the snow to fill the cup to the rim.
- Bring the cup inside and let the snow melt.
- Observe how many ounces or milliliters of water remain after the snow has melted.
- Record that amount.

## Phase 2

- Go back outdoors and fill the measuring cup to the rim (as in phase 1) by packing snow in it as tightly as possible.
- Bring the cup inside and let the snow melt again.
- Observe how many ounces or milliliters of water remain after the snow has melted.
- Record that amount.

■ **Discussion:** In which phase of your experiment did the cup contain the most water? Why? How much difference was there? If you depend on snowpack for your drinking water, which type of snow would you want?

■ **More fun:** Conduct this experiment several times during the winter and record the water measurements. Does the amount stay the same over the winter?

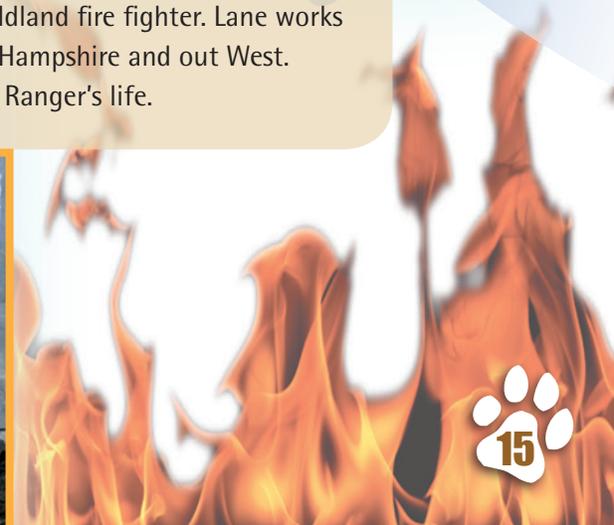
## Wildfires and Winter Clues

Out West, the size of the snowpack (the amount of snow on the mountains) and how long the snowpack remains give Snow Rangers clues about how bad wildfire season will be. If all the snow melts too early in the spring, wildfire season will be "hot." To predict what the upcoming wildfire season will be like, Snow Rangers measure the snowpack and determine how much water is in the snow.



## In the Heat of the Summer, What Does a Snow Ranger Do?

For Snow Ranger Jeffrey Lane (top left), fire and ice tell his story. Jeffrey works hard all winter on the White Mountain National Forest in New Hampshire. He mainly works at Tuckerman Ravine. But in the summer season, he is a wildland fire fighter. Lane works on crews that fight wildfires in New Hampshire and out West. So, fire and ice co-exist in this Snow Ranger's life.





# INTERVIEW

## A SNOW RANGER OR FOREST RANGER



Find out more about winter in the forest and what it's like to work in the forest. Contact a local Forest Service, U.S. Department of Agriculture, Ranger Station and arrange an interview with the Snow Ranger or Forest Ranger. Here are some questions to ask during the interview (you may need more paper):

Date of the interview: \_\_\_\_\_

Begin: Hello, Ranger (Name) \_\_\_\_\_

My name is \_\_\_\_\_

Where did you live when you were my age? \_\_\_\_\_

How old were you when you decided to become a Snow (or Forest) Ranger? \_\_\_\_\_

What is your favorite part of the job? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

What tasks do you do in the winter that you don't do in the summer? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

What is your scariest memory as a Snow (or Forest) Ranger? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

What is your most exciting memory? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

What advice would you give someone who wants to become a Snow Ranger? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

End: Thank you, Ranger (Name) \_\_\_\_\_, for the interview.



**As a Junior Snow Ranger, I will make a difference by**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



**ENJOY YOUR NATIONAL FORESTS!**

# CONGRATULATIONS!

Now that you've completed the activities in this book, you are just one step away from becoming an official Junior Snow Ranger. Please fill out the Junior Snow Ranger Official Form on the detachable card and mail it to us at:

**Junior Snow Ranger  
USDA Forest Service  
National Symbols Cache  
402 SE 11th Street  
Grand Rapids, MN 55744-3955**

After the Forest Service receives your form, the agency will mail you a Junior Snow Ranger card, badge, and bandana. We hope you enjoyed the activities in this guide and that you'll share the fun and excitement you had with friends, family, and people in your community.



## Share the Junior Snow Ranger Experience With a Friend!

Forests and green spaces are important for everyone to share. Now that you've learned so much about the forest, bring a friend along and introduce him or her to the excitement of being a Junior Snow Ranger.

### It's Easy to Do.

Just tear off the Share With a Friend Card.

Give it to a friend.

Ask your friend to fill it out, put a first-class stamp on it, and mail it to the USDA Forest Service.

We will send your friend the same Junior Snow Ranger adventure guide you are holding in your hands. Then your friend can do the activities and become a Junior Snow Ranger, too!



# JUNIOR SNOW RANGER OFFICIAL FORM

Your Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ ZIP Code: \_\_\_\_\_

E-mail: \_\_\_\_\_

Age: \_\_\_\_\_

School Name: \_\_\_\_\_

Parent/Family Member/Friend (Adult), please sign here.

I certify that \_\_\_\_\_ completed the activities in this guide.

Signed \_\_\_\_\_ (name of the adult)

## SHARE WITH A FRIEND CARD

Yes, I also want to be a Junior Snow Ranger.

My friend \_\_\_\_\_ gave me this card and told me all the exciting ways I can learn about the forest and the environment. Please mail me a Junior Snow Ranger adventure guide so I can complete the activities and become an official Junior Snow Ranger.

Your Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ ZIP Code: \_\_\_\_\_

E-mail: \_\_\_\_\_

Age: \_\_\_\_\_

School Name: \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ ZIP Code \_\_\_\_\_

Postage  
Requested.  
Post Office will  
not deliver  
without proper  
postage.

**JUNIOR SNOW RANGER  
USDA FOREST SERVICE  
NATIONAL SYMBOLS CACHE  
402 SE 11TH STREET  
GRAND RAPIDS, MN 55744-3955**

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Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ ZIP Code \_\_\_\_\_

Postage  
Requested.  
Post Office will  
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**JUNIOR SNOW RANGER  
USDA FOREST SERVICE  
NATIONAL SYMBOLS CACHE  
402 SE 11TH STREET  
GRAND RAPIDS, MN 55744-3955**



<http://www.fs.usda.gov/conservationeducation>

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January 2012  
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