

**FIREWISE**<sup>®</sup>  
Generation

# *Firewise FireCamp*

A Firewise Day Camp Program for Middle School Students



*About this program:*

The national Firewise Communities® program has long aimed its wildfire safety educational efforts at adults – the residents making choices about building or purchasing homes and how to maintain the home and landscape. Those adults are influenced by the many myths about wildfire that we seek to discredit – most importantly, the myth that ordinary individuals are helpless in the event of a wildfire. We began hearing from many sources that our young people need this education as well.

We talked to the YMCA Program Director in northwest Washington state, who had seen a camp he managed destroyed during the Hayman Fire in Colorado in 2002. He felt that the skills and knowledge imparted by the Firewise Communities program were important ones for the youth population that attends the many summer camps around the United States. And he challenged the local Washington State University Master Gardeners group and our Firewise staff to develop a curriculum that could be presented at YMCA-Camp Orkila. He requested a day camp course that would lead middle-school-aged campers — in the sixth to eighth grades — on a path to discovery of the many facets of wildfire. His research had indicated that the Firewise program was perfect for this age group, which is typically under-served by day camp programs. Middle school students are ready to learn the science, strong enough to do the mitigation work, and young enough to not be too distracted by other interests or demands on their time.

Adjusting our thinking from educating adult homeowners to educating pre-teen and teenaged youth provided us with some insights. Kids don't directly influence whether or how their family lives in a wildfire-prone area. However, they are old enough to understand the responsibilities that result from making these choices, and they care about their family's well-being. The curriculum empowers them to help make their families safer. As we worked through the camp curriculum and the actual pilot, we also realized, hey — if we can get a group of middle-schoolers to show they can do this wildfire mitigation work, how can adults possibly say it is too difficult?

We hope you have as much fun using this curriculum with your campers as we had putting it together and testing it at YMCA Camp Orkila. You can use it in a one-week or a two-week format, and you can find all the reference materials (see page 18 ) easily on [www.firewise.org](http://www.firewise.org) and other websites. We wish you success, because it means a safer future.

When campers return home, they can visit the Firewise Generation website at <http://www.firewise.org/fw-generation/> to use interactive modules to reinforce what they learned at camp, and to share with friends.

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*Curriculum goal:*

To increase the understanding of wildfire among young adults and empower them to implement Firewise® practices around their homes and in their communities.

*Learning objectives:*

Campers completing participation in *Fire Camp* will be able to:

- 1) Understand wildfire behavior basics
- 2) Demonstrate increased physical strength and endurance
- 3) Handle mitigation tools safely
- 4) Assess homes and other buildings for wildfire readiness
- 5) Know what to do when a wildfire occurs
- 6) Prepare a home for wildfire season
- 7) Conduct Firewise maintenance work around homes
- 8) Understand the roles of wildland and structural firefighters
- 9) Discover the relationship between fire and healthy forests
- 10) Understand the physics of fire and vegetative fuels
- 11) Share knowledge of wildfire preparedness with others

*Logistics:*

For purposes of simplicity, only wildfire-related curriculum is included in this guide. Morning presentation of the learning elements is recommended. Normal day camp activities such as swimming, riding and various types of sports can be conducted during the afternoons. The day camp duration can be one or two weeks. Lessons are described along with a recommended structure for delivery of the lessons over one or two weeks.

*For the Organizers:*

*Recommendations and Requirements Before You Begin*

Organizers need to be familiar with basic Firewise concepts related to structure mitigation. A complete understanding of the information within the “*Communities Compatible with Nature*” publication (available at no cost except for shipping and handling from the Firewise online catalog at [www.firewise.org/catalog](http://www.firewise.org/catalog)) is essential in order for mitigation activities to be successful.

Organizers will need to make the following arrangements ahead of time:

- Secure agreements with camp managers/facility supervisors for proposed mitigation projects involving removing vegetation from on and around camp buildings.
- Obtain sufficient number of the required mitigation tools for each camper. See the list of required materials on page 5. The campers will need to use these tools on several days over the course of the camp. Ensure that camp staff agrees upon the location and extent of the mitigation project as it will involve removing vegetation and debris from around a structure.

*For the Organizers:*  
(Continued from page 1)

- Work with camp staff ahead of time to arrange for waste removal—the mitigation project will generate a lot of brush, dead leaves, pine needles, etc.
- Each camper must wear safety glasses and work gloves. The local fire department may be willing to donate or loan these items.
- Provide sufficient adult supervision during the first mitigation project, both for the personal safety of the campers and to ensure that the mitigation work is being done effectively/properly.
- Acquire permission to light campfires and conduct fire experiments in selected locations.

When counselors are assigned to *FireCamp*, consider giving them the following tasks:

- 1) Administer the Pack Test (see Lesson 2, *Building Strength and Endurance*)
- 2) Create a *FireCamp* cheer (i.e., "Fire, Fire, CAMP, CAMP CAMP!")
- 3) Gather and prepare the wood used to make the fire for the campfire-building exercise
- 4) Help organize the fire experiments
- 5) Participate in all mitigation projects
- 6) Have some group songs/games ready to go during downtime

## MATERIALS LIST

### ***Required:***

- Mitigation tools: Good-quality loppers, clippers, small saws, pole pruners, and rakes. There should be sufficient tools available for each camper to be issued one. For a group of twelve campers, suggested tools distribution is two small saws, two pole pruners, two rakes, two loppers and four clippers, plus a tool for each staff member.
- Work gloves
- Safety glasses
- Small tablets and pencils/pens
- Evaluations

### ***Recommended:***

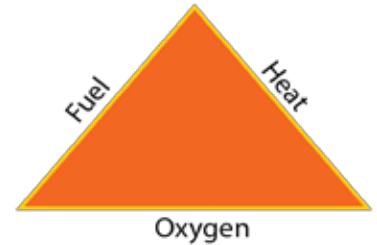
- Sample wildland firefighter Red Pack (*See Lesson 2*)
- Candle, match, glass (*See Lesson 1*)
- DVD – Wildfire! Preventing Home Ignitions (*See Lesson 1*)
- FireWorks! Curriculum (*see Lesson 9*)
- Materials required for experiments (*see Lesson 9*)
- If campout is offered, a list for each camper detailing what to bring
- For the campout, consider engaging a storyteller to share Native American and/or ancient myths about fire
- Small backpacks for each camper (*can be donated*)
- Hats, t-shirt or other logo'd item for each camper

# FireCamp Lessons

## Lesson 1: Wildfire Behavior Basics

*Learning Objective: Campers will understand wildfire behavior basics*

Introduce the concept of the fire triangle, fuel (fine and heavy), ignition, flammable, non-flammable and fire-resistant properties, embers, radiation and radiant heat, convection, surface fuel and crown fuel.



### Suggested teaching tools

- “Wildfire: Preventing Home Ignitions” or similar instructional W/UI DVD. The suggested DVD is available from the Firewise online catalog ([www.firewise.org/catalog](http://www.firewise.org/catalog))
- Illustrate combustion by lighting match, then lighting and extinguishing a candle. Place a glass over a short candle to illustrate the fact that oxygen is required for fire to occur. Show examples of fine and heavy fuels.

*Optional Exercise:* Build campfires that will light with one match. Divide into teams, with each team being responsible for its own fire. Use this exercise to reinforce the basics of fire behavior and the fire triangle. Counselors and instructors should have prepared kindling, small wood and large pieces of wood, and have newspaper available. If time permits, consider roasting marshmallows. Extinguish campfires properly.

## Lesson 2: Building Physical Strength and Endurance

*Learning Objective: Campers will be able to demonstrate increased physical strength and endurance by the end of the camp.*

Introduce the concept of the **Pack Test**. If available, show the campers the contents of the fire pack used by wildland firefighters. To better acquaint the campers with the challenges of wildland firefighting, they should engage in a pack test at the beginning of each day's session. (To pass an actual pack test, a wildland firefighter must hike three miles with a 45-pound load (pack/vest) in 45 minutes.)



*Continued on page 5*



# FireCamp Lessons

## **Lesson 2: Building Physical Strength and Endurance**

*(Continued from page 4)*

Identify a route, starting with an approximate half-mile hike and working up to three miles by the end of a two-week camp; or 1½ miles by the end of a one-week camp. The test should be performed on a pre-measured relatively level course. Packs for the campers are optional and depend on the campers' physical stamina.

## **Lesson 3: Handling Mitigation Tools Safely**

*Learning Objective: Campers will be able to handle mitigation tools (saws, loppers, pruners, rakes) safely and effectively.*

Prepare campers for this lesson by explaining appropriate attire for the days that mitigation activities will be performed. Campers should wear long sleeves, long pants and sturdy shoes for mitigation projects.

Demonstrate the safe use and handling of mitigation tools, including loppers, small saws, clippers, pole pruners and rakes.

Conduct a one-hour mitigation project that allows the campers to become comfortable with the tools. A highly visible site is preferred, near a structure, if possible.



## **Lesson 4: Assessing Structures for Wildfire Readiness and Preparing a Home for Wildfire Season**

*Learning Objective: Campers will learn 1) how to assess a structure for wildfire readiness; 2) how to prepare a home for wildfire season and 3) how to share knowledge of wildfire preparedness with others.*

Instruct campers regarding how to prepare a home for wildfire season. This should include, but is not limited to:

- Creating a 'fuel-free' zone extending three feet from all sides of the structure by trimming vegetation and removing flammable materials in that area.

*Continued on page 6*

# FireCamp Lessons

## Lesson 4: Assessing Structures for Wildfire Readiness and Preparing a Home for Wildfire Season (Continued from page 5)

- Identifying and removing branches that are brushing/overhanging the structure, or are within 6 to 10 feet of the ground
- Raking or otherwise removing leaves and pine needles that have collected at the baseline of the structure
- Pruning shrubs and other vegetation to remove excess growth, dead branches and leaves
- Moving woodpiles to at least 30' from the structure
- Checking for tall grass around the structure
- Checking the roof and gutters
- Checking hoses to be sure they have not deteriorated and developed leaks over the winter



Form two teams. Each will assess a structure. NOTE: Each camper will need a small pad and pencil for this exercise. Campers will take notes and identify modifications that decrease the structures' vulnerability. They will also be instructed to look for 'good' things the homeowner may already have in place. The teams will report to each other and discuss their findings. *(If homeowners are available to receive recommendations, the teams can report their findings and suggestions to them.)*

Campers will consider the following factors when assessing the structure:

- Roof - Is it flammable?
- Is there a fuel-free area of three feet on all sides?
- What is the volume and condition of vegetation within 30 feet of it?
- Are overhanging and/or adjacent branches 6-10 feet away from it?
- Is there vegetative buildup (needles and leaves) along the baseline of the structure?
- Are gutters free of leaf litter and needles?
- Where is the woodpile?
- What is the condition of adjacent grass?





# FireCamp Lessons

## Lesson 5: Know What To Do When Wildfire Occurs

*Learning Objective: Campers will learn what to do when a wildfire occurs.*

Discuss campers' experience with wildfire and what they should do if a wildfire occurs nearby including:

- Report the fire
- Put on cotton/woolen clothing including long pants, a long-sleeved shirt and a bandana to protect the face. Wear sturdy leather shoes/work boots and wool socks, as well as gloves
- Close windows, vents, garage doors
- Move all flammable furniture, door-mats, woodpiles, or vegetation that could catch embers and ignite to at least 30 feet from the house
- Roll up or remove any awnings and exterior blinds
- Fill buckets or other bulk containers with water
- Locate long water hoses, shovels and rakes. Place them where they are easily accessible to firefighters
- Dampen all areas on the side of the house facing the direction of the fire
- Locate pets, family members and the family evacuation kit
- Back as many vehicles as possible into the garage and close the garage door. If evacuation occurs, close the garage door when leaving. When evacuating, keep the car windows rolled up.



# FireCamp Lessons

## Lesson 6: Conducting Firewise Maintenance Work Around Homes

*Learning objective: Campers will learn 1) how to conduct Firewise maintenance work around homes; and 2) how to share their knowledge of wildfire preparedness with others.*

Begin with an exercise called **The 30–Feet Game**. The object of the game is to understand the concept of the 30 feet of mitigated area that should exist on all sides of a house. The exercise should be done on a lawn or another comfortable surface. Get each camper's height in inches. Figure out which campers have a collective height of 30 feet (360 inches). Ask those campers to lie head to toe, forming a 30 foot–long chain (it should take five or six campers). Then have one camper stand at each end of the human chain and let the members of the chain stand up. Each camper should then pace off the 30–foot distance, remembering how many paces it took him/her to go 30 feet.



Next identify a structure within the camp area that can benefit from fire mitigation. Conduct an assessment of the structure. One member on each team should serve as scribe and write down the group's suggestions. The suggestions can be delivered to the camp office, if appropriate. The team can spend an hour, with tools, reducing the structure's wildfire risk.

Tasks that might be included:

- Create a 'fuel-free' zone extending three feet from all sides of the structure by trimming vegetation and removing flammable materials in that area.
- Going out 30 feet, identify and remove branches that are brushing/overhanging the structure, or are within 6'–10' of the ground.
- Rake or otherwise remove leaves and pine needles that have collected at the baseline of the structure, or under porches.



*Continued on page 9*

# FireCamp Lessons

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## **Lesson 6: Conducting Firewise Maintenance Work Around Homes**

*(Continued from page 9)*

- Prune shrubs and other vegetation to remove excess growth, dead branches and leaves.
- Move woodpiles to at least 30' from the structure.
- Check for tall grass around the structure *(if mowing is recommended, campers can note that for later).*
- Check the roof and gutters *(if cleaning is recommended, campers can note that as well)*

## **Lesson 7: The Roles of Wildland and Structural Firefighters**

*Learning Objective: Campers will understand the roles of wildland and structural firefighters*

Visit local fire department and request a presentation from a wildland firefighter. It should include explanation of wildland and structural firefighter gear, and information about wildfire behavior. This is a good opportunity for students to handle selected fire apparatus, including hoses.



# FireCamp Lessons

## Lesson 8: Fire and Healthy Forests

*Learning Objective:* Campers will discover the relationship between fire and healthy forests.

Take students to nearby forest or natural area. (The walk can be a substitute for the pack test.) Arrange with staff for a hike during which fire in the ecosystem will be explained. Include forest health and the cleansing effect of fire, illustrations of ladder fuels, examples of fire behavior on slopes (if any), and a fire history of the area. If possible and appropriate, request that jurisdictional staff serve as interpreter/guide.



## Lesson 9: Physics of Fire and Vegetative Fuels

*Learning objective:* Campers will understand the physics of fire and vegetative fuels

*This lesson involves fire experiments!* Select three or four experiments from the **FireWorks Curriculum** prepared by the USDA–Forest Service Rocky Mountain Research Station. General Technical Report RMRS–GTR–65, September 2000. This document is downloadable at [http://www.fs.fed.us/rm/pubs/rmrs\\_gtr65.html](http://www.fs.fed.us/rm/pubs/rmrs_gtr65.html). NOTE: The children will need their pads and pencils again for this session to record experiment results. Before beginning any experiments, be sure students understand how to properly light a wooden match — hands down, match up.

Suggested activities include, but are not limited to:

- Activity 3–4, The Fire Triangle (*a favorite, often called The Matchstick Forest*)
- Activity 3–5, The Bucket Brigade
- Student Page 6, Dead vs. Green Needles
- Student Page 8, Large vs. Small Twigs



# FireCamp Lessons

## Lesson 10: Sharing Wildfire Knowledge

**Learning Objectives:** 1) Campers will be able to share their wildfire knowledge; 2) Campers will demonstrate increased physical strength and endurance.

Campers will participate in their final pack test to demonstrate their increased strength and endurance.

Conduct a sharing session. Each camper should share how he/she can make his/her home safer from wildfire as a result of camp.



Ask campers to complete brief evaluations of the *Fire Camp* experience and lessons.

Provide awards for each camper. These might include:

- Volunteer hour certificates from the camp
- Firewise pins/magnets/T-shirts from the Firewise on-line catalog
- Other handouts





# FireCamp Lessons

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## OPTIONAL LESSON

### *Lesson 11: Applying Wildfire Mitigation Knowledge*

*Learning objective: Applying wildfire mitigation knowledge*

Schedule a campout at a local state, county or federal park, if possible. Arrange with the jurisdictional staff to mitigate an area — preferably one that contains a structure of some sort.

#### On the first day of the campout:

- 1) Upon arrival at campsite, unload gear.
- 2) Go to area to be mitigated and conduct an assessment of its wildfire risk.
- 3) Conduct mitigation project for approximately one hour. Arrangements with the park for green waste removal should have been made prior to arrival. NOTE: The same mitigation tools will be required for this project as for previous projects, so be sure they are available, including goggles and gloves.
- 4) Pack test/long walk during the afternoon.
- 5) After dinner, build a campfire, if possible. This is a good time to engage a storyteller who can relate either Native American fire myths or other fire legends.

#### On the second day of the campout:

- 1) Conduct a pack test
- 2) Break down campsite
- 3) Return to day camp site for afternoon activities



# A Special Treat

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For enthusiastic instructors who want to make a special treat for the final day of camp, the recipe for camp-fire cookies follows:

## Camp Fire Cookies

### Ingredients:

- 1 bag of pretzel sticks
- 1-2 cups semi-sweet chocolate chips
- 1 bag candy corns
- 1-2 T. shortening
- Sheet of waxed paper



Cover a cookie sheet with waxed paper and set aside. In a double boiler, slowly melt one cup of the chocolate chips. When melted, add one heaping tablespoon of shortening and stir well. Dip the ends of the pretzel sticks in the melted chocolate and, using the chocolate as glue, build a campfire by placing/stacking pretzels in a circular shape. (Break some pretzels in half before dipping to create an uneven log look.) Continue until you have enough "logs" to resemble a campfire. Then add a small spoonful of melted chocolate to the center of each campfire and gently stick in three candy corns. Let dry on wax paper overnight.

# FireCamp Syllabus — One Week Option

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The *FireCamp* lessons can be taught in a one-week format as suggested below. The campers should participate in a simulated pack test each morning so that their progress can be measured on the final day. The Lesson 8 walk through the forest may be substituted for that day's pack test.

## **Day One**

Lesson 1: Wildfire Behavior Basics

Lesson 2: Building Physical Strength and Endurance

## **Day Two**

Lesson 4: Assessing Structures for Wildfire Readiness and Preparing a Home for Wildfire Season

Lesson 5: Know What to Do When Wildfire Occurs

Lesson 1: Optional Exercise: Building a Campfire with One Match

## **Day Three**

Lesson 3: Handling Mitigation Tools Safely

Lesson 8: Fire and Healthy Forests

## **Day Four**

Lesson 6: Conducting Firewise Maintenance Work around Homes

Lesson 9: Physics of Fire and Vegetative Fuels

## **Day Five**

Lesson 7: The Roles of Wildland and Structural Firefighters

Lesson 10: Sharing Wildfire Knowledge

# FireCamp Syllabus — Two Week Option

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The *Fire Camp* lessons can be taught in a two-week format as suggested below. The campers should participate in a simulated pack test each morning so that their progress can be measured on the final day. The Lesson 8 walk through the forest may be substituted for that day's pack test.

The longer time-frame provides more options for the arrangement of lessons and the possibility of including Lesson 11, which involves an overnight camp-out. It also integrates well into a standard, two-week day camp curriculum by providing time in the afternoons to swim, do crafts, or engage in traditional camp activities.

## **Day One**

Lesson 1: Wildfire Behavior Basics

Lesson 2: Building Physical Strength and Endurance

## **Day Two**

Lesson 3: Handling Mitigation Tools Safely

Lesson 1: Optional Exercise: Building a Campfire with One Match

## **Day Three**

Lesson 4: Assessing Structures for Wildfire Readiness and Preparing a Home for Wildfire Season

Lesson 5: Know What to Do When Wildfire Occurs

## **Day Four**

Lesson 6: Conducting Firewise Maintenance Work around Homes

## **Day Five**

Lesson 7: The Roles of Wildland and Structural Firefighters

## **Day Six**

Lesson 8: Fire and Healthy Forests

*\*Note – For a two-week camp, this will be the beginning of the second week, presumably a Monday. It is a good idea to spend some time reviewing what campers learned during the first week.*

## **Day Seven**

Lesson 9: Physics of Fire and Vegetative Fuels

## **Days Eight and Nine**

Lesson 11: Applying Wildfire Mitigation Knowledge

## **Day Ten**

Lesson 10: Sharing Wildfire Knowledge

# List of Reading Materials

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For additional reading the following materials may be downloaded or ordered from Firewise online catalog at [www.firewise.org/catalog](http://www.firewise.org/catalog).

## Print Materials

- 1) Firewise Guide to Landscape and Construction (ICN 15929)
- 2) Firewise Guide to Landscape and Construction with DVD (ICN 15936)
- 3) Communities Compatible with Nature (ICN 10184)
- 4) Be Firewise Around Your Home (ICN 12434)
- 5) Firewise Construction/Landscape Poster set (ICN 9194)

Firewise Challenge Exhibit Kit (ICN 10527)

## DVD's

- 1) Making Your Home Firewise (ICN 9881)
- 2) Home Improvement (ICN 9886)
- 3) Wildfire! Preventing Home Ignitions (ICN 9521)





*[www.firewise.org](http://www.firewise.org)*