



Description: Students learn how to keep notes on their observations and activities in the bosque while observing sites that have previously burned.

Objective: Students will develop essential observation and recording skills required of naturalists, scientists or other nature appreciators, in the context of studying the effects of fire in the bosque. They will notice what a fire does to a forest.

Materials: Naturalist Notebook: Fire activity pages
pencils
hard surface for writing, such as cardboard, notebook or a clipboard
thermometer
wind meter or Beaufort wind scale (included in this activity)
compass
wet/dry bulb thermometer (to determine relative humidity)
field guides for reference back in class

Background: This activity follows the format of the Naturalist Notebooks (Activity #4) in this guide. It provides a journaling activity focused on the topic of fire. This activity introduces students to the process of collecting field information and teaches them some basic journaling skills. This follows a similar format to the other Naturalist Notebook activities (introduction, general observations and site descriptions, directed observations and/or data collection and synthesis). This format encourages students to ask questions and continue their learning back in the classroom with field guides and other resources.

The focus in this activity is fire in the bosque. In addition to collecting basic types of data such as temperature and humidity, students make observations of plants and animals present in burned and unburned sites. Some burn sites are described in the essay "Fire in

44. Naturalist Notebooks: Fire

Grades: 5–12

Time: 30 minutes to one hour

Subjects: science, language arts, visual arts

Terms: *restoration, reclamation*





the Bosque” at the beginning of this chapter. This activity can stand alone, be used as an introduction to a study of fire in the bosque (including other activities in this chapter) or be part of a long-term journaling project. Please see the original Naturalist Notebooks, Activity #4, as well as Field Explorations Booklet, Activity #3, for more information on journaling.

Procedure:

Make plans for a field trip to a bosque site that has burned and to nearby unburned areas. Some are listed in the “Fire in the Bosque” essay in this supplement; others may be found through an Internet search. It may be useful to do the Fire Vocabulary Match-Up, Activity #41, before doing this activity, to begin to familiarize students with some of the terms used to discuss fires. Use the following discussion points with students before the trip and while at the burned site.

Photocopy the Naturalist Notebook pages, one for each student.

Have students think about what they expect the burned site to be like, before you go. Make predictions about the physical characteristics of the burned and unburned areas (journal page 2, Compare and Contrast Burned and Unburned Sites). Do you expect there to be differences?

Can students tell if there was more than one fire on the same site?

Can students tell how long it has been since the fire? (Consider size of sprouts, amount of herbaceous growth, amount of decay in burned trees.) This may be affected by the type of restoration/reclamation activity that has occurred at the site, if any. In some cases, it may be difficult to tell that there has been a fire.

Discuss the difference between restoration and reclamation.

Extensions:

Research Sir Francis Beaufort and the Beaufort Wind Scale on the Internet.

Keep a weather journal for your home or school.

Visit a recently burned site soon after a fire, and then visit it again at regular intervals to observe changes that occur as the site recovers from the fire.

Bosque Restoration



Land managers have different goals in treating natural sites that have been damaged, such as by a fire.

Restoration seeks to return a site to the way it was before modern humans altered it. *Reclamation* gives a new use to an area, which may not be similar to its original condition.

Can you see examples of restoration or reclamation at the burned site? Describe what you see.

Most fires in the bosque are started by people. What do you think about that? How do you think these fires are started?



Bosque Fire



Like most ecosystems, the bosque may have had fires, but the fires of the past were probably much cooler and less destructive. With the absence of regular flooding, forest conditions today are drier. Now there is a build-up of limbs, leaves and dead trees that provide fuel to make wildfires burn much hotter. Scientists are still learning about the long-term effects of fires in the bosque. Today you will make observations of burned and nearby unburned forest sites.

Name _____

Date and time _____

Location description _____

Weather (temperature, wind, cloud cover, precipitation in last 24 hours) _____

Fire Detective: Can you tell if there has been a fire at this site?

Check off what you see:

- burned tree
- logs or stumps with charcoal on them
- several dead trees together
- sprouts of trees or shrubs from blackened stumps
- other (describe) _____





Compare Burned and Unburned Areas

Fire changes the physical and biological nature of a site, which provides a different habitat for organisms living there. Record the following data for the burned site and, for comparison, the nearby unburned forest. Record the following with thermometer, wet/dry bulb thermometer and Beaufort Wind Scale:

Burned Unburned

air temperature

soil temperature

humidity

wind speed

Simple observations can give information about biological factors. Record what you observe:

Leaf litter (Do leaves completely cover the ground or partially cover the ground, or are they absent?)

Burned

Unburned

Plants (Do you see grasses and low herbaceous plants, shrubs and/or trees growing? Can you identify any?)

Burned

Unburned

Wildlife (List or describe mammals, birds, reptiles, amphibians, insects or other invertebrates (or evidence of them)).

Burned

Unburned



Spend a few minutes observing the burned site, and then the unburned site. Look up, down, all around. What is your impression? How does the burned site feel different from the unburned site? Can you tell what the burned site looked like before the fire? Write your thoughts and impressions here.

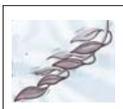
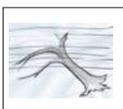
Find a piece of charcoal or a burned twig or piece of bark, and write or draw something with it here.



The Beaufort Wind Scale

The Beaufort Wind Scale is a system of recording wind velocity (speed) devised in 1806 by Francis Beaufort. It is a numerical scale ranging from 0 for calm to 12 for a hurricane. Sailors and forecasters use the Beaufort Wind Scale as a standardized way to rate wind speed.



Beaufort Scale	Wind Speed		Effects on Land	
	mph	kph		
0 (calm)	below 1	below 1		
1 (light air)	1-3	1-6	Smoke rises straight up; tree leaves still	
2 (light breeze)	4-7	7-12	Rising smoke drifts; wind felt on face	
3 (gentle breeze)	8-12	13-19	Leaves rustle; paper and dust raised	
4 (moderate breeze)	13-18	20-30	Small branches move; paper blows	
5 (fresh breeze)	19-24	31-39	Small trees sway, big branches move	
6 (strong breeze)	25-31	40-50	Big branches move; wind whistles	
7 (near gale)	32-38	51-62	Trees in motion; walking difficult	
8 (gale)	39-46	63-74	Twigs break; walking slow	
9 (strong gale)	47-54	75-87	Slight structural damage	
10 (storm)	55-63	88-102	Trees uprooted; structural damage	
11 (heavy storm)	64-72	103-117	Widespread damage	
12 (severe storm)	above 73	above 118	Severe damage and destruction	