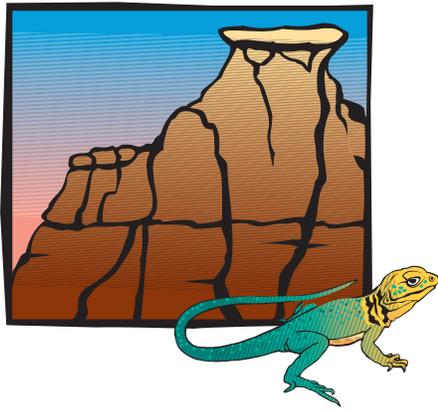


The Colorado National Monument Association Presents



# Adventures in Colorado National Monument

Teacher's Guide and Activities



by Winston Dines

*Adventures in Colorado National Monument:  
Teacher's Guide and Activities*

Colorado National Monument Association  
Visitor Center  
Fruita, Colorado 81521  
970-858-3617

Published by Colorado National Monument Association  
All rights reserved.  
©2000 Colorado National Monument Association  
Revised January 2001

Author  
Winston Dines

Illustrator  
Linda West

Graphic Designers  
Amy Stewart Nuernberg and Lynn Campbell

Editors  
Diane Hirschinger Gallegos, MS  
George Callison, PhD  
William Hood, PhD  
Sam Gingerich, PhD  
Renee Creeden  
Denise Hight  
Ron Young

Front cover/photo from  
"Through the Eyes of the Children"  
by Diane Hirschinger Gallegos and Tope Elementary Students

# Acknowledgments



*Adventures in Colorado National Monument: Teacher's Guide and Activities was a project that involved many people over a long period of time. We would like to thank the National Park Foundation and Mesa County Teachers Federal Credit Union for providing the major funding for this project. Other financial supporters were the Grand Junction Lions Club, Pyramid Printing (Owen O'Fallon), Gallegos & Associates (Glen and Diane Gallegos), Sam's Club, Xpedx (Rich Parrish), Alpine Bank, and Norwest Bank (Wells Fargo). Thanks also to the Junior Service League of Grand Junction for funding the CD-ROM version of the teacher's guide.*

*The cooperation, information, and support of the National Park Service staff at Colorado National Monument are greatly appreciated. A special thank you goes to Steve Hickman and Ron Young. The Colorado National Monument Association staff has committed large amounts of time and energy to the production of this teacher's guide. Their generosity and goodwill are at the heart of this work. Thanks to Amy Nuernberg for her enthusiasm and vision to take the printed word and make it into art. Thanks also to Linda West for her beautiful line drawings. In that spirit, this teacher's guide is dedicated to all who have come before to discover and protect the marvels of the mesas and canyons, and to all who come to explore and learn from the wonders preserved as Colorado National Monument.*

*The author would like to thank the many people whose ideas, perspectives, and feedback have helped to further this project. They include: the Colorado National Monument Association Board of Directors, Dusty Dunbar, Renee Creeden, Ron Young, Linda West, Amy Nuernberg, the National Park Service staff, Cary Atwood and her 1996-1997 5th graders, Andy Windsor, Jim Johnson, Forbes Davidson, and Joe Hall. Bill Hood deserves special recognition for his invaluable assistance with geological information. Penny Teeters, from the Basil T. Knight Staff Development Center, was instrumental in getting this guide and the District #51 content standards integrated. Others who helped in that process were Leah Lee, Vernann Ranney, Kim Renzi, Julie Heacock, the pre-certified instructors, and Kathy Kain. Thanks also goes to Joslyn, Nisia, Rochelle, and Jeff. Last, but not least, boundless thanks go to family and friends for their patience and support of this book.*

*The Colorado National Monument Association would like to thank past and present members of the Board of Directors who had the insight and dedication to produce this teacher's guide. The following members are Bruce Benge, George Callison, Diane Hirschinger Gallegos, Sam Gingerich, Bill Hood, Robert Kribel, Tom LaCroix, Kim Martens, Don Simonton, and Barb Voss. A special thanks goes to the committee that edited and produced Adventures in Colorado National Monument: Teacher's Guide and Activities. They are Diane Hirschinger Gallegos, Bill Hood, George Callison, and Sam Gingerich. Last but not least we would like to thank Winston Dines for her perseverance and devotion throughout this project.*

# Contents

---

## **1 Adventures in Colorado National Monument: Teacher's Guide and Activities**

- 7 Become a Member
- 8 Order Form
- 9 Introduction to the Teacher's Guide and Activities

### **CHAPTER ONE**

---

## **11 Getting Ready for Your Field Trip**

- 13 Introduction to the Teacher's Guide and Activities
- 14 What? Where? When?
- 21 Arranging a Field Trip
- 22 Preparing the Students
- 23 Field Trip Itineraries
- 25 Colorado National Monument Passes
- 26 Preparing for a Field Trip
- 28 Do the Right Thing
- 31 In Case of an Emergency

### **CHAPTER TWO**

---

## **35 Plant Life of Colorado National Monument**

- 37 Plants of Colorado National Monument
- 40 Land Forms and Life Zones
- 41 Tips for Plant Watchers
- 43 Plant Adaptations to the Environment
- 49 Plant Terminology
- 54 The Value of Magnification
- 55 Botanical Journal
- 60 Utah Juniper
- 61 Pinyon Pine
- 62 Tamarisk
- 63 Rabbitbrush
- 64 Sagebrush
- 65 Serviceberry
- 66 Mormon Tea
- 67 Mountain Mahogany
- 68 Globemallow
- 69 Indian Paintbrush

# Contents

## CHAPTER TWO (CONTINUED)

---

70	Yucca
71	Cactus
72	Find Your Own Plant
73	The Magic of a Drop of Water
80	Plant Scavenger Hunt
84	Floral Investigations
93	Territories
105	Plant Crossword Puzzle
108	Content Standards
119	Plant Life Bibliography

## CHAPTER THREE

---

### 121 Wildlife of Colorado National Monument

123	The Value of Empty Space
124	The Ten Most Wanted List
127	Finding Wildlife in the Monument: A Trail by Trail Guide
130	Tips for Spotting Wildlife Along the Trail
131	Wildlife Biography: Lizards
135	Wildlife Biography: Mountain Lion
137	Wildlife Biography: Bats
139	Wildlife Biography: Bighorn Sheep
141	Wildlife Biography: Eagles
143	Wildlife Biographies: Peregrine Falcon
145	Wildlife Biography: Swifts and Swallows
147	Wildlife Biography: Turkey Vultures
149	Developing Wildlife Viewing Skills
156	Animal Signs
165	Lizard Patrol
174	Stalking
181	Who Lives Here?
189	Content Standards
197	Wildlife Bibliography

# Contents

## CHAPTER FOUR

### **199 Geology of Colorado National Monument**

- 201 The Rocks Before You
- 216 Three Types of Rocks
- 232 Make a Stratigraphic Column
- 249 Stratigraphy  
Up and Down Hike
- 266 Stratigraphy Field Notes: Worksheet #1
- 267 Stratigraphy Field Notes: Worksheet #2
- 269 Erosion Hike
- 281 Mapmaker, Mapmaker, Make Me A Map
- 293 Let's Get Oriented
- 300 Geologic Pursuits
- 306 Content Standards
- 318 Geology Bibliography

## CHAPTER FIVE

### **321 Beyond the Scenery: The National Park Service and Colorado's Other Land Management Agencies**

- 323 Colorado Plateau
- 324 Who Manages Our Public Lands?
- 326 The National Park Service
- 332 Behind the Scenery
- 338 These Lands Are Your Lands
- 359 Content Standards
- 361 Beyond the Scenery Bibliography
- 362 Index

# Introduction to the Teacher's Guide and Activities



*Adventures in Colorado National Monument: Teacher's Guide and Activities has been developed to increase awareness of the outstanding natural classroom and learning environment that is "right next door" at Colorado National Monument. To that end, the guide has two purposes. The first is to give detailed information about geologic, plant, animal, historic and cultural resources that make the monument so unique and worthy of federal protection. The second is to provide area teachers and other interested parties with site-specific, hands-on activities for use on field trips to the Colorado National Monument. Above all, this guide is intended to help visitors to explore safely and knowledgeably the many exciting features of the canyons and mesas.*

## Who Will Use the Guide

While this guide is a valuable reference about Colorado National Monument for all ages, it is primarily designed for use by fourth to eighth grade teachers in the Mesa County, Colorado schools. To assist these teachers in meeting their curriculum requirements, all activities have been formulated to meet 2000 Mesa County Valley School District #51 Educational Content Standards. Black and white square icons at the top of each activity indicate different curriculum subjects, such as Language Arts, Science, or Social Studies, that are aligned with the field activity. Content Standards are outlined in the back of each chapter.

## What is in the Guide

The guide is divided into six parts. Chapter One gives useful ideas for planning and preparing for a field trip to Colorado National Monument. Chapters Two, Three, and Four concentrate on the plant life, wildlife, and geology of the area. Land management agencies in the region are defined, and the history of the National Park Service and Colorado National Monument are outlined in Chapter Five. The last part is the Index.

### CONTENT STANDARDS



**Math**



**Science**



**Language Arts**



**Art**



**Social Studies**

# Introduction to the Teacher's Guide and Activities



## How to Use the Guide

Using the teacher's guide is easy, because the chapters are all arranged in the same way. Each begins with in-depth background information about a topic, such as geology. The material is concentrated to include key identifications, concepts, and perspectives that will be relevant during the field trip experience. This format creates a useful reference for teachers, trip leaders, or others seeking to learn more about Colorado National Monument. Animals that are commonly observed, plants that are frequently seen, unusual details that might otherwise be overlooked, are among the items covered in the "Background Information" section.

Next, each chapter includes a section devoted to site-specific activities that bring students and teachers into close contact with plant, wildlife, geologic, or historic resources found within Colorado National Monument. Each exercise has a similar "recipe"-like structure that enables first-time field trip leaders as well as experienced outdoor educators to follow the proper sequence of steps to have a positive, exciting learning experience. The structure includes:

- ~ the purpose of the activity;
- ~ the best age level to participate in the activity;
- ~ the amount of time required to complete the activity;
- ~ the materials needed;
- ~ the best location (either in the classroom or at Colorado National Monument);
- ~ the essential background information and context for the activity;
- ~ how to do the activity, in a "Step-by-Step" process along the trail.

These activities and worksheets can be copied and used in the field or the classrooms. Whenever possible, ways to follow-up on what was learned and experienced are also given.

This combination of background information with exciting and challenging interactive opportunities to seek out the land forms, rock formations, habitats, plants, and animal inhabitants of Colorado National Monument creates a marvelous learning environment for children and adults. The first time field trip leader will find that they learn enough to be comfortable in front of their group. Even the instructor with years of experience will find new tips, ideas, and places to try out for enhancing their programs. Above all, this guide encourages discovery, wonder, and insight among students, while assuring a safe, well-prepared atmosphere for the adults.

Welcome to Colorado National Monument!

May you enjoy your adventures!