A Guide to the Side of the Sea:

A Teacher's Guide for Field Trips to Rocky Intertidal Areas

by

Michael Roa

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About the Author

Michael Roa has been a classroom teacher for over 35 years. He has taught at the elementary, middle school, high school, and college levels. Environmental issues have been a central concern throughout his teaching career, and his students have undertaken numerous award-winning conservation projects. He is the author of *The Environmental Science Activities Kit*. He currently teaches science and math at Kenilworth Junior High School in Petaluma, California. He can be reached at < mroa@sonic.net >.

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Introduction

Why This Guide?

As the human population increases, the strain on all resources increases. Natural areas are no exception, and the fascinating tide pools of the ocean shores are especially threatened by over use and inappropriate use. Many popular areas for "tide pooling" are in danger of being loved to death. One purpose for this *Guide* is to help teachers and other group leaders learn to protect this unique habitat when they bring students to visit, enjoy, and learn about the intertidal areas of the coast.

Not only does the environment need protection, but students must be taught how to explore the tide pools safely. This *Guide* provides information about how to be safe while visiting the rocky coast.

State Park Rangers and Interpretive Specialists have noticed that some elementary teachers have a strong background in science and natural history, while others have little science training. Elementary teachers may have majored in social science, English, or any one of a number of other areas other than science. This *Guide* provides a brief summary of major ecological principles and other information that all teachers (indeed, all educated citizens!) ought to have to understand the environment upon which we all depend. The scientific information included below goes beyond what teachers should expect elementary students to know and understand, but is important for teachers' understanding of the coastal environment. The scientific information is a quick review of some of the ecological principles taught in most high school science classes.

A trip to the intertidal area should not be an isolated activity. Rather, it should be part of a larger unit of study. It is important that students view their visit to the intertidal zone not as just a day out of the classroom or as just a day at the coast. A field trip to the coast should, of course, be enjoyable, but it should also provide the student with opportunities to learn about and to increase their appreciation for the plants and animals inhabiting the intertidal zone.

It is hoped that by learning about the natural environment, children (and adults!) will increase their appreciation of the natural world and will become more willing to actively protect our environment.

How to Use This *Guide*

While a teacher does not have to be an expert on coastal organisms or ecology, a basic understanding of ecological principles will enable the teacher to help students to maximize their learning during the precious time spent visiting intertidal areas. This

Guide provides that basic knowledge, and teachers and other users of this *Guide* should use it to review the basic science content before taking students on a field trip to the coast.

The teacher should not attempt to be a "fountain of knowledge" for the students. Rather, it is the teacher's job to expose the students to the wonders and beauty of nature and to help the students learn, and to learn how to learn, not to provide them with all of the answers to their questions. Hence, the title of this guide has a double meaning. It is a guide to learning about the coast—the side of the sea—but it also reminds the teacher to try to be a **guide on the side**, guiding the students to **discovering** knowledge, rather than being an encyclopedia of knowledge or "sage on the stage."

To help students prepare for their visit to the coast, a number of pre-trip activities are provided. Many of these activities are intended to be "discovery" activities, in which the teacher helps students discover things. Teachers should select activities that are appropriate for their students and, of course, should feel free to modify them as they see fit.

The study of the coast should not end when the students get on the bus to go back to school. Several post-trip activities are provided; some of these, too, are discovery activities. As with the pre-trip activities, teachers should select and modify the activities as appropriate for their students.

Interspersed throughout the science background are "Teaching Ideas" that you might find useful. Look for them in *italics*.

This *Guide* also includes the information needed for a teacher to arrange for a tide pool visit led by California State Park Interpreters, Rangers, other staff, or volunteers.

Appendices include a partial listing of California State Standards, in abbreviated form, a glossary, and listings of a variety of resources that the teacher might find useful.

While this *Guide* was written primarily for the rocky coast in northern California, it will be useful in other areas. Certainly most of the activities can be used elsewhere, many in a variety of environments.

About State Standards

While many California teachers support the concept of having standards to guide our instruction, some are concerned that there is too much emphasis on cognitive learning… memorizing facts without allowing time for the development of the whole child. The study of nature provides a wonderful opportunity for the teacher to encourage the development of affective and kinesthetic learning.

Many of the lessons in this *Guide* can be used to help teach California State Content Standards through visits to tide pools. For those lessons, standards are listed by number. Those standards, in abbreviated form, are listed in Appendix A. Science Standards are, of course, the focus of most visits to the tide pools. Many teachers focus almost exclusively on the cognitive (knowledge) Science Standards. It is important to emphasize the Investigation and Experimentation Standards that are listed at the end of the Science Standards documents.

While the emphasis in this *Guide* is on science, other standards can be addressed while studying science. Some of the standards that can be addressed through tide pool visits are listed on pages 143-146. Learning generally occurs best in context, and the study of science provides an interesting context for many subjects. Creative teachers can surely find ways to use a trip to the coast to teach still more standards.