

**Resource Review**  
**Stephanie Bohr**

**Description of Resource**

**Title:** *Mountains to the Sea Educator Activity Guide: Animal Tracks and Signs*

**In a Nutshell:**

This exhibit guide is intended to be used in conjunction with a class field trip to the North Carolina Museum of Natural Sciences' Mountains to the Sea exhibit hall. However, many of the activities can also be completed in the classroom or on school grounds. Numerous natural science topics are presented in the exhibit hall, but this particular guide focuses on animal tracks and signs. The guide includes student activities to be completed during the field trip, as well as pre- and post-activities to enhance the field trip experience. The guide also includes background information on animal tracks and signs, plus useful additional resources. The guide not only enriches the Museum experience, but also fulfills state science curriculum goals, as part of the North Carolina Standard Course of Study.

**Grade level:** K-8

**Length:** 46 pages

**Date published:** 2000

**Contact name:** Barbara Beaman

**Contact address:**

11 West Jones Street  
Raleigh, NC 27601-1029

**Phone:** (919) 733-7450 ext. 610

**FAX:** (919) 733-1573

**Website:** [www.naturalsciences.org](http://www.naturalsciences.org)

**Cost:** Free

**Subjects:** Science

## **Key Characteristics**

### *1.2 Balanced presentation of differing viewpoints and theories.*

The activity guide focuses on basic information that can be gathered from animal tracks and signs (diet, habitat, movement, predation, etc.). This indicator is not fulfilled because the guide does not present information or issues over which there are differing viewpoints or scientific explanations. The information presented is widely accepted and verified, so balanced presentation is not necessary in the context of this resource.

### *1.3 Openness to inquiry.*

The activities encourage learners to explore the concept of animal tracks and signs from a range of perspectives (seeing, hearing, smelling, touching). However, the activities focus more on gathering data and information (i.e., measuring tracks, tallying animal sounds, and observing signs) than forming opinions about an issue. The activities focus on student exploration of animal perspectives rather than those of other people.

### *2.2 Focus on concepts.*

This resource does an excellent job focusing on the overriding concept that we can learn about the way an animal lives by examining the tracks and signs it leaves behind. All activities and referenced exhibits present information (i.e., bird calls, beaver dams, raccoon tracks, scat, etc.) as part of the unifying theme of animal tracks and signs.

### *2.3 Concepts in context.*

The concept of animal tracks and signs fits into several larger ecological concepts, like courtship, communication, predation, warning, territoriality, and food webs. The activities address individual categories of signs (tracks, scat, food remains, nests/shelter, scent, sound, and plant damage) and place them in the larger context of how animals survive, depend upon, and alter the environment. While ecological contexts are addressed, this resource fails to include social and economic contexts, or how humans fit into the ecological context as animals themselves.

### *3.1 Critical and creative thinking.*

Students are challenged to gather data and draw conclusions, such as examining scat and owl pellet contents to determine the animal that left it and their diet. Creative thinking is addressed through the creation of classroom museum displays and original stories and illustrations. Approximately half of the activities address critical and/or creative thinking.

### *3.3 Action skills.*

The resource completely lacks action skills development. Environmental issues are not addressed, nor are skills to resolve them mentioned. All activities noticeably lack any reference to human activity or human interaction with the animals and habitats presented.

#### *4.1 Sense of personal stake and responsibility.*

As this resource totally lacks an action orientation, this indicator is not met at all. The relationship between human behaviors and the environment is not mentioned, much less how students could evaluate their own choices in regard to environmental issues.

#### *4.2 Self-efficacy*

Environmental issues are not included in this resource, so self-efficacy is not addressed. Learners are not presented with issues, so they do not perceive their influence, be it positive or negative.

#### *5.2 Different ways of learning.*

This resource is exceptional at including different teaching and learning styles. Activities range from identifying scent-marked territories to searching for animal signs in the outdoors to completing reports to designing mini-exhibits to writing and illustrating a story on animal tracks. No matter what the teacher's or students' preferences, there are many activities to engage everyone.

#### *5.8 Assessment*

In this resource, assessment opportunities are extremely diverse. Each activity offers a different way of measuring student progress. Examples of assessment include: matching (visual and audio), scavenger hunt, track creation and identification, territory location based on scent, fill-in-the-blanks stories, data sheets, original stories and illustrations, and classroom museum displays.

#### *6.5 Accompanied by instruction and support.*

This activity guide offers excellent instruction and support. Background information includes definitions, explanations, and examples for the overall guide, as well as each individual activity. Correlations with the exhibits are clear, including answers and locations. Teacher preparation is easy and brief. Extensive lists of references and resources for both students and teachers are included, along with contact information for any supply providers (like owl pellets and synthetic tracks).

#### *6.7 Fit with national, state, or local requirements.*

This resource guide is correlated to the required North Carolina Standard Course of Study. Correlations are plainly stated on each activity. Additionally, there is a helpful, readable chart in the introduction that summarizes which activities meet which curriculum strands for each grade level.

### Overall Review of Resource

Overall, I give this resource a B-. I determined this by judging each indicator as an A, B, C, or D. I then averaged all of the indicators for each characteristic.

Fairness and accuracy: C

Action orientation: D

Depth: C+

Instructional soundness: A

Emphasis on skills building: D+

Usability: A+

To get the overall grade, I averaged all six characteristics. I did not assign any F's because the resource did not go *against* any indicators. At worst, the indicators were simply not applicable.

The resource did an excellent job meeting the guidelines it had obviously targeted, like usability, instructional soundness, and accuracy. The focus was on the exploration of a natural science topic (animal tracks and signs), not skills, issues, or action. To be a true EE resource, the guide needs to address human impacts on the environment and possible solutions. Overall, this resource provides excellent activities for inclusion in an EE unit. Each activity is creative, diverse, effective, easy, fun, and engaging. However, it is not substantial enough to stand on its own as an EE resource.

To improve this activity guide's usefulness as an EE resource, I suggest altering each activity and adding a culminating project. By simply extending each activity, students can investigate how humans impact animal signs and what these interactions mean to animal survival. Students could investigate questions like the following:

What happens to food caches, nests, and shelters when dead and old growth trees are chopped down?

How do hormones and pollution impact scent marking?

If habitats are destroyed, where will animals mark their territory?

What effect does noise pollution have on animals that communicate with sound?

Extending the existing activities to address these and countless other issues increases depth and provides the opportunity for skill development, action, and decision-making based on evidence from multiple perspectives.

A culminating project would also fill in the gaps. Students can examine how scientists use animal tracks and signs in current and relevant research. One example is reproductive physiologists using fecal hormone levels to track and manage captive endangered species to optimize reproductive success. Wildlife management can also be informed by food preferences determined by scat. Students could then design their own studies in which they use tracks and/or signs as data. Student-generated research questions and data collection can partner with issues investigation to turn into an action project. For example, students could gather data on food preferences of local birds by setting up feeders and gathering data on tracks in sand, discarded shells and casings of nuts and berries, and fecal material. Action projects could include educating the community and distributing appropriate food sources to help local birds over-winter or migratory birds on stopovers. A culminating project would reinforce the strengths the activity guide already possesses and improve its ability to teach environmental responsibility, skills, and action.