Teacher's Guide

2013 – 2014

EARTH SCIENCE

LIFE SCIENCE

HARVARD MUSEUM of NATURAL HISTORY

All programs correlate with
Massachusetts Curriculum Frameworks

HARVARD MUSEUMS OF SCIENCE & CULTURE

Dear Educator,

Welcome! We are excited to work with you to expand your students' perspective of the natural world, support field trips where students and adults learn together, and deepen your own professional development.

The newly renovated **Mineral Gallery** looks spectacular, with historic cases refinished to their original luster, a new timeline of Earth's history featuring touchable specimens and innovative exhibit pieces addressing current earth science research into tectonics and arctic geology. Videos from the gallery are accessible online to use in your classroom.

Look for our newest exhibit, ***Thoreau's Maine Woods: A Journey in Photographs with Scot Miller***, opening November 16, 2013. It will combine stunning photographs of Maine by photographer Scot Miller with text from Thoreau's classic essay collection, *The Maine Woods*.

Prepare for your trip by viewing the **"Making the Most of Your Visit Video"** which you can access at: www.hmnh.harvard.edu/school_visits.html or by scanning the QR code at the bottom of this page with your smartphone.

Four-and-a-half billion years of Earth history are waiting for you to explore at the museum. Contact reservations at 617.495.2341 or reservations@hmnh.harvard.edu for help planning your visit.

Sincerely,

Wendy Derjue-Holzer
Education Director

Call 617.495.2341 or visit hmnh.harvard.edu for more information

See the back page for pricing, scheduling, and reservation information

ALL CLASSES ARE TAUGHT BY HMNH EDUCATION STAFF

Coverage of topics in the Museum's school programs

- ● strong coverage
- ● light coverage
- hands-on lab
- self-guided visit

		Ecology & Habitats	Anatomy, Physiology & Adaptations	Biodiversity & Classification	Evolution & Fossils	Geological Processes	Rocks	Minerals
K–2	Welcome to the Forest	●		●				
	Dig into Fossils	●	●		●	●	●	
	Animal ABCs	●	●	●				
	Home Sweet Home	●	●	●				
	Bug World!	●	●	●				
3–5	The Changing Earth				●	●	●	
	Rocks and Minerals						●	●
	Jaws and Claws	●	●	●				
	Inside Skeletons		●	●				
	Sketchbook Naturalists: Birds	●	●	●				
	Mineral Lab							●
	Human Origins Lab (Gr 4–6)		●	●	●			
	Forest Ecology	●	●	●				
6–12	Human Evolution		●	●	●			
	Exploring Evolution		●		●			
	New England's Prehistoric Past				●	●	●	
	Sketchbook Naturalists: Birds	●	●	●				
	Climate Change	●			●	●		
ALL	Self-Guided Visits	●	●	●	●			●
	Gallery Activities		●		●			●

all ages

Self-guided Visits & Gallery Activities

Explore the museum at your own pace, letting students discover things they've never seen among the 14,000 specimens on display.

Gallery activities including Junior Paleontologist, Animal Trackers, and Explore Evolution, help students look closer at specimens and make connections to big ideas. They are available on our website for free download. You may also create your own activities during a free preview visit or by consulting our website for a description of the permanent and temporary exhibitions.

Visit: hmnh.harvard.edu/school-visits/teacher-resources.html

SCHOOL PROGRAMS

See the back page for pricing and program times

grades K–2

1 1 hour

hands-on lab

Welcome to the Forest 1
(Pre-K & K Groups)

Maximum of 30 students for this hands-on lab

Who lives in a forest? What sights, smells, and noises make a forest special? Young students will explore life in a New England forest through storytelling, movement activities and examination of plant, animals, and fungi specimens.

Dig Into Fossils 1

What are fossils and how do they form? What clues can they give us to life in the past? Students will become paleontologists as they answer these and other questions about fossils and prehistoric life from three different periods in Earth's history.

Animal ABCs 1

On an imaginary walk through the forest, students will discover different animal groups and compare their differences and similarities. They will look at animals with and without backbones and then examine birds, reptiles, mammals, and amphibians to compare their life cycles and special characteristics that make each group unique.

Home Sweet Home 1

Students will take a tour of habitats around the globe and search for the creatures who call these places home. From lush rainforests to frozen tundra to scorching deserts, they will explore these fascinating environments and the unique adaptations that allow plants and animals to survive in challenging conditions.

Bug World! 1

Maximum of 30 students for this hands-on lab

Through close observations of museum specimens and live animals, students will investigate the diverse world of insects and their relatives and discover the special features that allow them to live in varied habitats all over the world.

Professional Development Opportunities

Look for lectures, small group discussions, and multiday professional development opportunities throughout the year. Please see our website or contact us (617.496.9584) for further information.

Stay updated by subscribing to our Teacher e-news, emailed several times during the year.

In addition, the Museum offers multiple opportunities for adult learning. A detailed list of free lectures, adult classes, and museum-wide events is available on our website.

- Call 617.495.2341 or visit hmnh.harvard.edu for more information

grades 3–5

1 1 hour
hands-on lab
2 2 hours

The Changing Earth 1

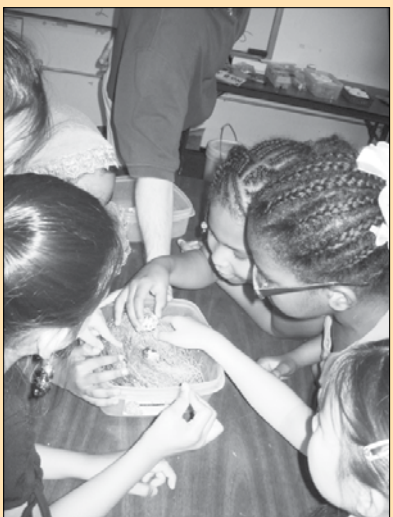
Students will explore rocks, fossils, and other specimens to uncover the geologic history of our region over the past 600 million years. They will discover how plate tectonics, weathering, erosion, and mountain building have all shaped New England's landscape.

Rocks and Minerals 1

Students will become geologists as they explore the fascinating underground world of rocks and minerals. They will learn how scientists use color, heft, hardness, and other properties to identify minerals and discover the surprising uses of minerals around the home.

Jaws and Claws 1

By comparing and contrasting a variety of predators, students will discover the specialized adaptations that allow them to find and capture their prey. They will examine the eyes, ears, teeth, and beaks that enable animals to successfully hunt fish, insects, mice, and clams.



Inside Skeletons 1 hands-on lab

Maximum of 30 students for this hands-on lab

Starting with the human skeleton, students will investigate the functions of bones. By examining the skeletal structures of other animals, students will observe how these creatures' bodies have become adapted for jumping, flying, and other lifestyles.

Mineral Lab 1 hands-on lab

Maximum of 30 students for this hands-on lab

Students will explore an amazing array of minerals in a lab-like setting. Using scientific tests and careful observation of properties, such as color, hardness, and magnetism, students will practice identifying common minerals the way geologists do.

Forest Ecology 1 hands-on lab

Maximum of 30 students for this hands-on lab

From tiny insects to towering trees, from sun to soil, students will explore a forest environment. By examining skeletons, plants, live animals, and fungus, students will investigate connections between living and nonliving components and the flow of energy within an ecosystem.

Human Origins Lab (Gr 4–6) 2 hands-on lab

Maximum of 30 students for this hands-on lab

How did we become the brainy, social, bipedal creatures that we are today? Using the evidence shown in the skulls, bones and tools of our ancient human ancestors, students will explore the major physical and technological changes seen from Australopithecus to Homo sapiens.

Sketchbook Naturalists: Bird Adaptations 2 hands-on lab

Maximum of 30 students for this hands-on lab

Through careful observations and sketches, students will follow in the footsteps of great naturalists, learning science by studying natural objects. They will investigate the special features of a variety of bird groups to discover how these animals are adapted to their habitats.

GRADES 6–12

We accommodate classes ranging from middle school to A.P. Biology by adapting the programs to the age and content knowledge of the students.

1 1 hour
2 2 hours
hands-on lab
self-guided visits

Exploring Evolution 1

Recommended for grades 6–8 or as an introduction to evolution for grades 9–12
Through examination of museum specimens, classroom discussion, and scientific reasoning, students will explore the evolutionary concepts of variation, inheritance, natural selection, and artificial selection that explain the biodiversity of life on Earth today.

Climate Change 1

Is our climate changing? How do we know? Using fossils, rocks, and scientific data, students will investigate climate in two dramatically different periods of Earth's history and compare it to today's changing climate.

Human Evolution 2

By comparing the skeletons and technology of human and non-human primates from Australopithecus to Homo sapiens students will see the evolutionary trends which led to the emergence of modern humans. Students will learn how skulls, teeth, hips, and other key features have evolved through time. Seeking a program that is more anthropology based? Try the Human Origins Lab for grades 4–6.

New England's Prehistoric Past 2

How has New England changed over the past 500 million years? By studying rocks, fossils, and living animals that provide the clues to ancient oceans, volcanoes, and ice ages, students will leave this lab with a better understanding of what New England looked like, who lived here, and how scientists know about these ancient environments.

Sketchbook Naturalists: Bird Adaptations 2

Recommended for students up to grade 8.
Through careful observations and sketches students will follow in the footsteps of great naturalists, learning science by studying natural objects. They will investigate the special features of a variety of bird groups to discover how these animals are adapted to their habitats.

HIGH SCHOOL VISITS ANYTIME

Having trouble finding time for your class to visit as a whole group? The museum now offers a program for teachers to pre-purchase passes at the reduced group rate of $5 for each high school student. These students can use passes on their own time to complete activities assigned by you. Contact us for more details.

- Call 617.495.2341 or visit hmnh.harvard.edu for more information

HOW TO SCHEDULE A PROGRAM

1. Select your desired program from this guide.
2. Identify your preferred program date, time, as well as several alternate days.
3. Determine the number of students and chaperones. One chaperone per five students is required for K–8 groups. Contact us about requirements for older students.
4. Reservations can be made with an **online form** or by calling **617.495.2341.** The reservations desk is staffed weekdays.
5. A confirmation email will be sent to you. Carefully review it and contact us if any information is incorrect. Watch the online video **"Making the Most of Your Visit"** as an overview of what to expect. Please note that your visit is not confirmed until you receive this email.

PROGRAM FEES AND SCHEDULES

Program type	Capacity	Times	Student rate	Free chaperones	Additional chaperones
1 hour	50 students maximum	9:30, 10:30, 11:30, 12:30	$8 each ($200 min. per program)	One free per five students	$10 each
2 hour	30 students maximum	9:30, 12:30	$11 each ($275 min. per program)	One free per five students	$10 each
Self-guided visits			$5 each (special K–12 schools rate)	One free per five students	$10 each

All prices include museum admission

Contact us about fee reductions for qualifying groups

RESERVATION INFORMATION

- Reserve programs at least two weeks in advance. Spring programs often fill months in advance.
- Advance reservations are required to receive the school rate.
- Groups cancelling less than two weeks prior to a scheduled program will be charged the full program fee.

PAYMENT METHODS

Bring payment with you the day of your visit.

Checks: Single check made out to Harvard University

Credit Cards: MC, VISA, or AMEX

Purchase Orders: Arrange at least one week before your visit with the Education Office.

PARKING

Bus drop-off and pick-up is permitted in designated areas, but there is no bus parking available at the museum. Refer to the confirmation email for bus and car parking options.

OTHER MUSEUM PROGRAMS

Check the Peabody Museum of Archaeology & Ethnology and the Harvard Semitic Museum websites for more great K–12 programs.

CHAPERONES

Chaperones must stay with their students at all times and are responsible for the safety and proper conduct of the group. One adult chaperone is required for every five students (grades K-8).

LUNCH OPTIONS

Your group may eat on the lawn in front of the museum. During inclement weather, groups may eat in our lobby area. Lobby space is limited and available on a first-come, first-served basis. Sorry, we do not have a snack bar or dining facilities.

MUSEUM SHOP

The Museum Shop offers many interesting and educational items. Please have chaperones stay with students when visiting the shop.

FOR MORE INFORMATION

Call our Education Office at 617.495.2341, email reservations@hmnh.harvard.edu or check our website, www.hmnh.harvard.edu, throughout the year for updates.

Photos: Nate Dean; Tony Rinaldo, Patrick Rogers, Heather Queyrouze; Kayla Willis

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Explorers welcome!